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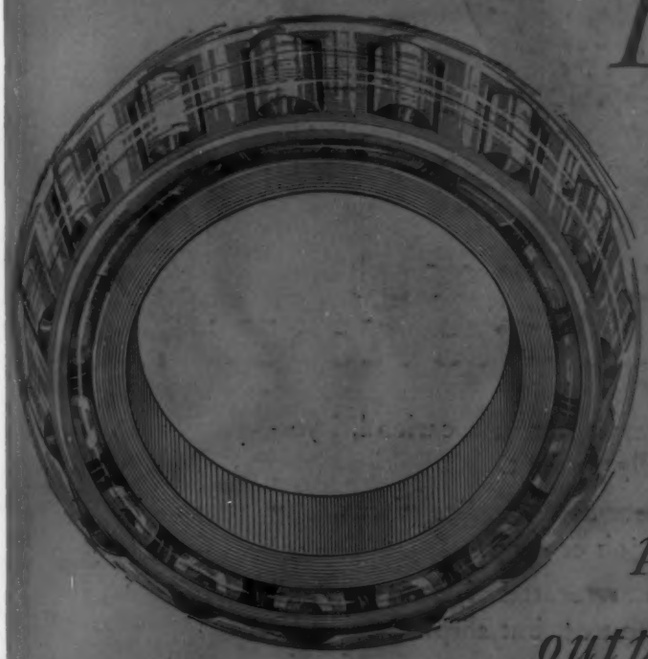

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THE IRON AGE

New York, July 22, 1926

ESTABLISHED 1855 VOL. 118, No. 4

More Steel and Cement from Europe

France and Belgium, with Cheap Labor and Low Freights, Will Sell Continuously to the United States—Plans for Direct Representation Here

BY EDWIN C. ECKEL*

DURING the winter and spring of 1925-1926 it was possible to carry out a rather detailed investigation of industrial conditions in western Europe, particularly in so far as these conditions bear on the question of exports to the United States. This work was for the individual account of a client who happens to be interested in several industries now subjected to heavy foreign competition. There was no idea of publishing its results in any form, since the work had no public or official basis whatsoever. But some of my conclusions having seemed of interest to a leading steel manufacturer, the editor of THE IRON AGE has asked that they be summarized for general use.

This statement, which explains how the article comes to be written at all, must also serve as an apology for its limitations and its personal character. The conclusions reached are entirely my own. They are expressed with entire freedom, and are here presented as being merely personal judgments on a very difficult situation. I regret that they can not be more optimistic; but only a stock broker could see anything bullish in this situation; and only a hardened politician could pretend to offer any simple remedy.

Pre-War Struggle for Outer Markets

It will be recalled by those readers whose memories can go back to a world before the war, that the years immediately preceding the outbreak were not particularly prosperous. From January, 1912, to July, 1914, there was indeed industrial struggle for markets, carried on between the overbuilt industries of the United States, Germany and Great Britain. This lack of profitable outlet was more noticeable in some lines than in others, but it was a broadly general condition.

The point I wish to make now is that in spite of that pre-war condition, no one in America was troubled by actuality or fear of shipments from our competitors *into* the United States. The areas of competition were still without our own borders.

Today, on the other hand, the competition is *here*, as well as in South America and other former overseas markets. And what we are interested in determining now are the conditions which make such competition possible, the regions from which it is most pressing, and the period over which it is likely to persist.

If we can reach sane conclusions on these three points it will then be possible to talk rationally about possible remedies—if indeed any remedies are practicable.

Conditions Now Favoring Exports to United States

In 1926 certain European nations can ship certain products, very profitably, to the United States; in 1913 this was not possible. We know that European coal and iron ore supplies have not changed for the better during that period, and that our own raw materials are not sensibly worse. We know that, with few exceptions, European mines and mills are not in markedly better shape than they were in 1913; our own have probably gained a little by comparison.

The conditions which now favor exports to the United States must arise, therefore, from matters not

*1503 Decatur Street, Washington, D. C.

MR. ECKEL'S close-range study of industrial conditions in Western Europe dates from his engineering service in the A. E. F. as major, from July, 1917, to July, 1919. One episode in that experience was the operation of several cement mills with troop and civilian labor. Since the war he has been in Europe on three extended investigations for American clients—in 1921, 1923 and 1925-26. In 1901-1905 he was assistant geologist United States Geological Survey, and in 1906-1907 geologist in charge of investigations of iron ores and structural materials. He resigned in 1907 to take up private practice in iron ores and cement materials.

Mr. Eckel is author of "Cements, Limes and Plasters," "Cement Materials and Cement Industries of the United States," "Coal, Iron and War" and of numerous papers on engineering and economic geology.

It will be seen that Mr. Eckel looks for increasing European competition for American manufacturers in their home market, particularly in certain products which he names and on which Belgium and France have low wages, low European freights, low ocean freights and low overhead.

included ordinarily under the head of raw materials or plant.

That might have been anticipated when we consider that the present export pressure exists in such widely divergent products as iron, steel, cement, brick, pottery products and glass. Thus the causes which make European exports to America possible and profitable—for they are very profitable indeed—must be of very general character, affecting a broad group of industries and products.

My own judgment, as the result of an investigation which was carried on with an entirely free hand and without prejudice, is that the causes which contribute to the present situation may be grouped as follows:

1. Low ocean freights
2. Low European water freights
3. An abnormally low European wage level
4. Low European overhead costs
5. Cheap handling of European export trade.

I may note that these factors are not listed above in the order of their importance, which indeed varies greatly when different products are considered. Each of them will be discussed briefly, in the order listed, which will give an opportunity at least to suggest their relative importance to one industry and another.

We may safely go further, and say that such comparisons will also point out very clearly what lines and types of products are most likely to suffer from European competition in the years to come.

The reader will probably notice, and perhaps with some surprise, that I have not included depreciated currency among the factors listed above. But currency depreciation in itself has no serious bearing on the question at issue. It does bear very seriously, however, if the depreciation has been deflected unequally, and as we shall see later that seems to have occurred with regard to wages and salaries.

1. Low Ocean Freights

Two causes cooperate to keep ocean freights abnormally low. One is the large amount of tonnage constructed during the last year of the war and the year or so of false hopes which followed. The other is that, due to the adoption of extreme protection by almost all countries, the amount of freight space needed is in all probability less than before the war. The first cause is commonly realized; the existence of the second is commonly overlooked. Yet I think it will be the decisive feature of the ocean freight situation for many years to come, and that ocean freights will remain low until the tonnage afloat has died down to the actual requirements—which may be ten years or more. This applies to everything except tanker tonnage, which is in a class by itself.

Depreciated Currency Not a Factor

Currency depreciation does not affect the ocean freight situation in any noticeable way. Coal and oil have to be bought from high-currency countries in any case; and the cheapest tramps now available are Norwegian and British—both owned and manned by citizens of high-currency countries. So freights from France, for example, are not necessarily lower than those from Sweden, time and distance considered.

On the other hand, there are some causes which do affect freights notably.

The chief of these, of course, is the fact that the actual costs of ocean freights to the ship owner are fixed by the round trip, while in most cases the selling prices of the freights are based on a full cargo one way and a part cargo in return. In most of western Europe the commodities bought from Canada or the United States are bulky and cheap, relative to space occupied; while the shipments in return are high-priced and compact. There is, therefore, chronically cargo space westward at very low rates, and frequently the westward rates for a fill-in cargo are merely nominal. Open rates this spring out of Channel ports to our own North Atlantic ports were ranging around 13s. a ton. But every day it was possible to load from a few hundred to a thousand or so tons of pipe, brick or cement at rates far below this figure, just to complete the cargo of a ship waiting partly loaded.

A Typical Canalized Belgian River. The Escault at Tournai, Belgium, showing barges used for transport of fluxing stone to Belgian furnaces and of cement for export via Antwerp

Ocean Freights Will Stay Down

To sum up the ocean freight situation, therefore, we may say that rates are lower than before the war; that they are apt to remain relatively low for many years to come; that currency depreciation does not affect them seriously; but that rates from countries buying heavy commodities in the United States or elsewhere will be always lower than rates from countries of evenly balanced commerce. This in turn means that Belgium, France and Italy, for example, will constantly have low rates to the United States and Canada.

2. Low European Water Freights

When an American exports steel, either it comes down to the coast by rail, or if made at a coast point its coke and ore come down by rail. In either case there is a high interior freight charge to the coast point.

When a German, Belgian or Frenchman exports iron or steel products, canals or canalized rivers are used for the assemblage at coast points. The freight costs on such canals are, I believe, around one-tenth cent per ton-mile. We may assume for convenience that from Pont-a-Mousson in Lorraine to Dunkirk the canal distance is less than 250 miles. From Essen to Rotterdam it is around 150 miles. From Mons to Antwerp it is less than 75 miles by water. If in an emergency the exporter paid as much as one-quarter cent per ton-mile it will be seen that no one total freight cost would be a serious item in the export profits.

At this stage of the matter currency depreciation does begin to play a part. Both wages for canal boatmen and the government charges for lockage, etc., are lower in gold on French and Belgian than on Dutch or

German canals and rivers. So here is an additional point slightly in favor of exportations from the Franco-Belgian-Luxemburg union as against Westphalia.

Finally, we can see that these low interior water rates are specially in favor of cheap and bulky commodities, while they will not specially aid in the shipment or export of dearer and lighter articles.

If we sum up the ocean and interior freight situation so far discussed, it seems as though $4 to $5 per ton in gold would carry pig iron, pipe or cement from

Typical French Mill Workmen. They can earn eighty cents a day; and if on piecework perhaps as much as a dollar

any producing point in western Europe to any North Atlantic port, in large cargoes, at any time. On the other hand by spreading the total shipment, in say thousand tons lots, over a number of ships, the total freights from European mill to American port might be only half these figures.

3. Low European Wage Level

Having considered transport costs, we may now turn to the other factors affecting possible selling prices—i.e., manufacturing and selling costs.

The European wage level, in gold, was always lower than ours, even before the war. The disparity was made up, to a large extent, by cheaper raw materials, better plant, and greater labor efficiency on our side.

Today our former English competitors seem to be for the time, and probably permanently, out of the struggle. Their coal situation is not a matter that can be mended by either politicians or labor leaders. Our other former competitor—Germany—is loaded with obligations which primarily force her to create a great export surplus, while at the same time they make export marketing difficult. Interior taxes, export dues and a gold currency, along with the loss of her only cheap iron ores, suggest that competition from Germany, like that from England, is more of a tradition than a future danger.

Low Wages in France and Belgium the Main Danger

When we turn, however, to the Franco-Belgian-Luxemburg region we find an area with a newly conquered supply of iron ores, with rebuilt mills and newly re-opened coal mines, and with the cheapest labor level in western Europe. If we are seeking the source of competition in the decade or so to come we do not have to go farther.

American Wages Relatively Higher Than Ever

The wage level in Belgium and France was always low, before the war, even as compared with German and British wages—and of course far lower than our own scale. Since 1914 the disparity has increased very sharply, far more than is commonly understood. American wages have risen fast, even faster than the cost of living, so that today the American workman can buy more for his day's pay than before the war. French and Belgian wages have risen *as expressed in francs*, but the gold value of both francs has fallen at an even faster rate; so that today the Belgian and French laborer can not buy nearly so much with a day's pay as before the war. Since, even in 1913, neither Belgian nor Frenchmen received an average decent living wage, as measured by our standards, his condition today is very bad indeed. It is partly compensated by one fact—that today there is full-time work for every man in either country; so that the annual wages of a laborer, measured in gold, are higher than in pre-war years. In other words, by working some 40 per cent more days per year, on the average, the Belgian miner or other workman can earn more money than he did in 1913. But as commodity prices have risen also, even this increased annual earning still can not buy so much food and clothing as his 1913 earnings got for him.

In countries with intelligently managed trades unions such a condition would not last long, because a series of strikes would end by raising the wage level at least until it corresponded to current living costs. But the trouble is that the Continental trades unions, unlike our own, do not concentrate their efforts on wages and working conditions, but wander off into the

Boys Working in Packing House at a French Cement Mill. This labor at present costs about sixty cents a day

domain of political action and social theory. In western Europe a strike is more likely to be a complaint against some government policy than an attempt to raise wages; and in almost every case it is involved in socialism. Now socialism, pleasant though it may be to dream about, looks toward the future rather than to the immediate present, and is more concerned in killing capitalism than in extracting higher wages from it. So long as this difference in trades union ideas and management exists, I do not look to see French

and Belgian wages increased very rapidly—and that is the point of interest to us at present.

Average Wage About a Dollar a Day

So far as actual wages go, I may say that after talking with many men in the two countries named—employers, superintendents and laborers—I would place the average hourly rate in France and Belgium today as somewhere between three and four francs. That covers the bulk of the industries which are our present concern—blast furnaces, foundries, cement and glass plants, mines. In all of these taken en masse we are safe in assuming that the whole payroll including overtime and piecework does not average as high at $1 gold per day; it is probably much nearer 90 cents per day average. As against this we average, perhaps, for the same industries and classes, some $4 to $5 per day. Having had a good deal to do with French workmen, my feeling is that they will give about the same amount of work per day as ours, and will do it with far less supervision. Recent comparisons of working forces and output, in French and American mills, seem to confirm this conclusion.

Above the manual labor grade, in mine, mill or factory, the disparity is perhaps still more pronounced. A good clerk or bookkeeper will cost not over $40 gold per month in France; a chemist gets little if any more; a technically trained manager of one large mill gets this year $130 gold per month—and thinks that he is doing rather better than the average.

4. Low European Overhead Costs

The factors so far considered—foreign wages and freights—are things which we will have to accept, for the time at least, as being definitely outside of American influence or control. But with the matter of overhead costs the case is not quite so clear. Here, it may be, there are possibilities of economies in our own industries.

Actual mill overhead—made up chiefly of laboratory and office salaries, depreciation and real estate taxes—is far less in western Europe than here. The matter of salaries has been touched on in the last section. The depreciation is far lower, both because of the prevalence of better construction and because a mill, per ton of output, will cost to build today between 60 and 75 per cent as much in Europe as here. Local taxation is no higher than here—and probably averages lower.

In the sales department the European mill will have far lower salaries and bonuses, and practically no advertising expense. In the general offices the European company will have a rather poorly paid managing director; and an important steel plant in Europe is likely to have office space which a single-furnace company in America might think beneath its dignity.

The net result of all these differences in conditions and practice is that the French or Belgian mill or foundry can sell closer to its actual mill cost than can an American company of equal size.

High Taxation Handicaps Europe

At this point we reach the first item which counts against the European, and that is taxation. Only those who never pay taxes can get the idea that French or Belgian taxation is low. It is in reality very heavy indeed, though mostly indirect, so that it is paid without suffering at any one point. Still, an income tax which takes 40 per cent of any dividend or interest payments can hardly escape notice, and it is an interesting commentary on Americans who write about low French taxation to note that none of them seems to have ever encountered it.

From our immediate standpoint, however, the important items are sales and turnover taxes of one sort or other, in both France and Belgium. For products which go into individual retail consumption these accumulate and become ultimately very heavy additions to cost. For bulk products sold direct, such as pig iron, pipe, cement, glass, etc., the totals may add 3 to 5 per cent to actual costs.

5. Cheap Handling of Export Trade

With the actual handling of export trade in such heavy products, we reach a stage which is as yet cheaply conducted. As the export trade increases, its management is likely to become more expensive. This apparent paradox is due to the fact that for the year past foreign mills have made no special effort, in most cases, to develop American markets directly. They have been satisfied to sell to buyers who came to them, or to export firms acting as middlemen, thus avoiding all expenses of introducing the article or brand on the American side. If they finally enter the American market direct, as some are beginning to do, they save, it is true, the middleman's profit, but they also involve themselves in advertising, in an American agent's salaries, expenses, etc. One or two mills have had bitter experiences in that way already, and most of them at the moment seem to believe that it is more economical merely to sell their goods f.o.b. ship and let some one else market them in Canada and America. My own idea is that in time this feeling will disappear, and that the larger units at least will prosecute their export business more directly and more actively, but also perhaps more expensively.

The Situation in Summary

Having discussed the various factors separately, it will pay to summarize the results very briefly:

Ocean freights are low, and show no sign of rapid advance. Canal freights in Europe are low and are likely to remain so. Neither of these is seriously influenced by currency depreciation; and neither will be seriously increased by stabilization of any currency.

Labor is cheap in Belgium and France. That is due partly to currency depreciation. It may be remedied slowly by strikes or, partly, by currency stabilization. At present France and Belgian wages per hour are about one-fourth to one-fifth of American wages. It is unlikely that on any stabilization plan that can succeed they will rise to over one-third of our average.

Overhead and selling costs are lower than ours. The export movement is as yet conducted rather casually. It is not dumping; it is on the contrary highly profitable. In Belgium this year the export trade must average 20 per cent higher prices than the domestic sales on some important products.

Mills can be built abroad for two-thirds or so of the American cost, and operated far more cheaply. Their product, under any tariff now existing or likely to exist, can reach our coast ports more cheaply than can our own output from our interior mills. As we leave the coast this foreign competition will decrease, owing to our own high rail rates.

Possible methods of meeting this competition are:

(1) Abandonment of our coast markets.
(2) Lowering prices in the coast markets to meet foreign competition.
(3) Buying the foreign output for account of an American pool.
(4) Building mills abroad.

Of these methods one and possibly two, requiring concerted action, are probably illegal. My own feeling is that the particular companies which feel the competition most keenly are likely to try the fourth method finally, when they become convinced that foreign competition is here to stay for a time.

At the outset of this article I noted that my investigation was entirely a private matter, and that it had no public or official bearing whatever. That fact makes it all the more necessary, as well as pleasurable, to acknowledge the very active aid given me by the Department of Commerce, both through its officials in various Washington bureaus and through several of its commercial attaches abroad. It would have been impossible to gather the mass of prices and statistics on which my original report was based, in any reasonable time, had it not been for the assistance extended so promptly and so completely by that department.

Blast Furnace Slag Analyses

Practical Interpretation of the Significance of Slag Characteristics—Iron, Manganese and Sulphur Are the Heat Indicators

BY WALLACE G. IMHOFF*

DAILY iron and slag analyses are made in most blast furnace plants to guide the superintendent and the blower in regard to the condition of the furnace. The silicon and sulphur analyses are brought back an hour after casting; a slag analysis is made daily. The silicon and sulphur analyses aid the blower in checking up more accurately on his estimated condition of the furnace, although, if there is a decided change one way or the other, he adopts measures to rectify the condition before he receives the analyses.

Under ideal conditions a large amount of heat is removed from the hearth at cast time and, in addition to the heat carried out of the hearth by the removal of the iron, a large amount of cold stock is precipitated into the hearth when the wind is taken off to close the hole. The normal thing to expect then, on the first flush after casting, is a somewhat colder hearth. Circumstances, of course, govern each case. Thus, if the furnace is beginning to grow cold, casting may aggravate this condition; if it is beginning to grow hot, and is carried along by "heat momentum," casting may only retard the heating-up process.

Those familiar with the practical operation know that it is one thing to figure a furnace burden, and quite another to obtain results which correspond to the

Fig. 1—Showing at Left the Complete Oxidation of Iron Shot Carried Out in Blast Furnace Slags. At right, the black spots are iron shot in suspension

figures. The answer, of course, is the constant variation in the composition of the raw materials and in the conditions. The coke may be fine and dirty one day and clean the next; the stone bin may be almost empty and the limestone may also be fine and dirty; or the ore may be wet and not uniform. All these variations in the character of the raw materials affect the conditions of the furnace, and this in turn is reflected in the composition of the slag.

To Know What the Slag Indicates

The iron is made by observing the practical appearance of the slag. It is important, then, to know what the practical condition of the slag indicates. Three important factors should be considered when interpreting the condition of the furnace from the slag. These are the appearance of the slag in the molten condition, the appearance of the cold slag sample, and the slag analysis as brought back by the chemist's report.

We can not consider one, without considering all three, if we expect to derive the greatest benefit. The question which arises at once, then, is the importance of a complete slag analysis. Does it pay to make a complete slag analysis? If a complete slag analysis is made, what information is thus made available?

The routine analyses of slags at a number of furnaces merely classify the results in a general manner, for example—silica, alumina and bases. A typical instance is as follows:

	Iron					Slag		
Time	Cast	Silicon	Sulphur	P	Mn	SiO_2	Al_2O_3	Bases
9 a. m.	1605	2.35	0.015	0.75	0.67	30.20	15.78	49.02
2 p. m.	1606	2.02	0.015					
7 p. m.	1607	2.15	0.013					
12 m.	1608	1.82	0.014					
5 a. m.	1609	1.95	0.013					
9 a. m.	1610	2.19	0.014	0.78	0.69	29.80	14.76	50.44
2 p. m.	1611	2.10	0.016					
7 p. m.	1612	2.53	0.011					
12 m.	1613	2.33	0.012					
5 a. m.	1614	2.74	0.012					

These analyses show a number of things instantly. The iron is hot and the sulphur low. The extremely

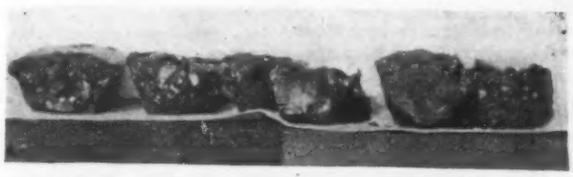


Fig. 2—Slag Samples Colored Black by Iron Oxide. The slag samples at the right are cold "limey" slags; those at the left are cold lean slags

low sulphur in the iron and the low silica in the slag indicate a small slag volume. The bases in the slag are high. The furnace is becoming hotter, a fact which is shown by the decrease of sulphur in the iron, higher manganese in the iron, and higher bases and lower silica in the slag. The iron is also higher in silicon.

A short time later the furnace becomes cold. Trouble develops. The sulphur in the iron rises; the furnace drives irregularly; the tonnage decreases; it will not take the usual number of charges. What is the matter? Reference to the slag analyses throws little light on conditions, save that the furnace seems to be getting too much lime.

What benefit would have been derived if a complete slag analysis had been made every day? The best answer to this question is to examine some complete slag analyses and give a practical interpretation

Fig. 3—Slag Samples High in Free Sulphur, the Gas Escaping as the Sample Cools

of what the results show the chemist, the blower and the superintendent. A complete slag analysis shows:

Silica	SiO_2
Alumina	Al_2O_3
Lime	CaO
Magnesia	MgO
Manganese	MnO_2
Iron	Fe (shot); FeO
Sulphur	S

This is merely a statement of the slag components, which in no way indicates how they are combined, or what each one signifies from a practical standpoint. There is an additional feature to complicate matters further, and that is the question of slag temperature,

*Buffalo, N. Y.

as a separate and distinct condition from slag composition. An attempt will be made to show clearly how all these factors indicate the exact condition of the furnace, if they can be but rightly interpreted.

Highly Refractory Materials Included

The first thing to consider is how the components are chemically combined with each other. This can be understood better by considering the slag in the molten condition. All the components are present. The silica, which melts at about 1650 to 1750 deg. C., forms the main body of the slag. The melting point of lime is in the neighborhood of 2750 deg. C.; that of alumina about 2050 deg. C. Magnesia, also, is a refractory material. Iron oxide tends to lower the melting point. The sulphur combines with the lime to form calcium sulphide. We can now say the slag is essentially a silicate of lime, magnesia and alumina, with manganese, iron and sulphur in smaller amounts.

Further study of the slag shows that the relation of the components to one another changes continually, depending on the temperature and on the quantity of the components available. This is indicated in a practical way by the different appearance of the slag when it becomes cold. Some slags are gray and the fracture is "grainy"; some are blue and the fracture is "stony"; some are white, some are black, some are green, and some are brown. Each component plays a distinct part with each condition, and it is the practical interpretation of this rôle that is valuable in regulating the furnace operation. A brief discussion of the results as indicated by the outward appearance of the slag will be valuable when considering the slag analyses given later.

Heat Indicators Tell Hearth Condition

Iron, manganese and sulphur, the heat indicators, show at once whether the hearth is hot or cold. Lime and silica also show the temperature, but they are not so sensitive. Iron is the most reliable heat indicator. An extremely hot slag with plenty of lime is pure white (see Fig. 4); an extremely cold slag is black (see Fig. 2). White slags have very low iron content; black slags may carry an iron content as high as 7 per cent.

Iron is found in blast furnace slags in three forms: as iron shot, as iron oxide (FeO) and, in extreme cases, as iron silicate. The condition of the sulphur directly influences the amount of iron found in slags. Free sulphur in slags gives them a "greasy" appearance when molten. This condition gives rise to a net-like state which holds the iron shot in suspension in the slag and completely envelops the iron shot with a sulphur film. When the slag is run off, the iron shot are carried out in suspension. When the shot comes in contact with the air, the sulphur film starts the iron burning. For an instant yellow (when hot) or purple (when cold) sparks jump from the slag runner. The temperature of the shot quickly falls below the burning point of the iron and the ball, with its black surrounding of iron oxide, may be seen embedded in the cold slag sample.

Black Iron Shot in Slag

Fig. 1 shows the black iron shot embedded in the white slag crust; note the large black spots in the samples at the right. These black spots are iron shot. Again, note the sample at the extreme left. This sample is entirely black, because the iron shot have been completely oxidized to iron oxide (FeO). This series illustrates how the iron shot are completely consumed and shows the black coloring due to the formation of the black oxide of iron.

When the iron shot are completely oxidized the entire slag will be black. This indicates a very cold slag. The iron shot are burned completely to the black oxide of iron (FeO) and this coloring is the most sensitive heat indicator.

Fig. 2 shows some extremely cold slag samples. It will be noticed that the black color in these slags is not merely a surface coloring, but contaminates the entire slag.

Of interest also in Fig. 2 are the white specks of undigested lime in the slags at the left. The samples in the middle are glassy, showing that the hearth temperature was very low. In extreme cases of coldness the slag is blood red when molten, and becomes a dark, glistening, heavy black iron silicate slag when cold.

Indications of Manganese and Sulphur

Manganese is also a fairly sensitive heat indicator. When the hearth is hot and the slag lean most of the manganese is reduced and goes into the iron. When the hearth is cold the manganese, if present in large quantities, will impart an olive green color to the slag. At times manganese will color the slag brown, indicating a slag hotter than a black slag.

Sulphur also is an extremely reliable heat indicator. Since the reduction of silica to silicon is a fairly high temperature reaction, the formation of calcium

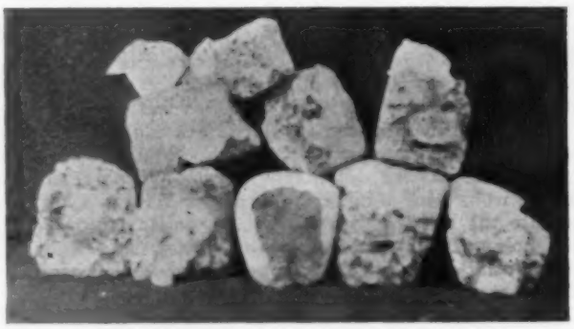


Fig. 4—An Extremely Hot Hearth Is Shown by the Snow White Color. There was practically no iron in these slag samples, which were high in sulphur

sulphide indicates a high hearth temperature. A large part of the lime which was combined with the silica is freed and combines with the sulphur. The practical indication that this reaction is taking place is heavy white "fog" or smoke rising from the slag runner at flush time. Free sulphur is indicated in a practical way by thin blue smoke rising from the slag runner. Additional evidence of free sulphur is the choking smell and smarting of the eyes when in the vicinity of this thin blue smoke. Slags high in free sulphur are indicated by a spongy, porous structure. Fig. 3 shows a slag sample high in free sulphur. Free sulphur may occur on a hot hearth or a cold hearth, and with a lean, glassy slag or a heavy "limey" slag.

A few of the practical indications of the conditions of the furnace have been discussed, before giving the examples of slag analyses, to show the interpretation of the slag analyses more clearly. Actual cases will now be cited, to demonstrate the value of a complete slag analysis, and also to show what practical conditions are indicated by the analysis.

(To be continued)

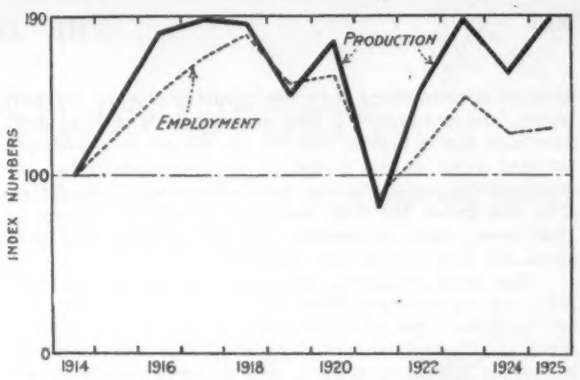
Wholesale Prices Moving Slowly Upward

Further slight increase in the index number of wholesale prices is reported for June by the United States Bureau of Labor Statistics. The figure given is 152.3, compared with 151.7 in May and with 151.1 in April, which was the lowest figure of the recent movement. The change from a year ago was more than five units, for 157.4 was registered in June, 1925.

Despite the increase in the average, there was another slight decrease in metals and metal products, which already for several months have held the lowest position of all the eight major groups. Metals stood at 125.1 in June, against 125.2 in May, 126.5 in April and 127.7 in March. The June figure was just one point below that of June, 1925. Fuels, clothing materials and building materials, in that order, continue to hold the highest relative prices of all items. All three of these are above 171. The only other items which are above the average are housefurnishing goods at 161.7 and foods at 156.6.

Productivity Per Man in Steel Industry

Gain of 49 Per Cent in Per Capita Output Over 1914 and of 25 Per Cent Over 1914-16



With Higher Index Numbers for Production in the Iron and Steel Industry in Recent Years Than for Employment, Increased Unit Labor Output Is Indicated

WASHINGTON, July 16.—Taking the output per man in 1914 as a base of 100, the output in 1925 for the iron and steel industry was nearly 150, according to a statement by Ethelbert Stewart, Commissioner of the Bureau of Labor Statistics, Department of Labor. Mr. Stewart declares that there is taking place in the United States today a new industrial revolution which may far exceed in economic importance that older industrial revolution ushered in by the series of mechanical inventions which occurred in England in the last quarter of the eighteenth century, and which eventually transformed English industrial, political and social life.

Other Industries Included in Survey

Comparisons with output in the automobile, boot and shoe, and pulp and paper industries, also, were made. In the case of the automobile industry, Mr. Stewart said the output per man last year was three times as great as in 1914. He referred to this as an almost incredible increase in an industry which had attained even in 1914 a high state of efficiency. In 1925 the ratio in the boot and shoe industry was 117, while on a 1917 base the output per man in 1925 in the paper and pulp industry was 134. These figures, surprising as they are, cover only about a decade.

Many people, Mr. Stewart said, are aware of the fact that great improvements in machinery, processes, management, etc., are taking place. But, except for magazine articles from time to time, little has been done to express in comprehensive terms this advance in productive efficiency. Some people have hesitated to accept as typical of industrial production as a whole the surprising figure of improved output in particular plants or establishments. Yet, Mr. Stewart said, "even when we deal in mass figures, the facts stand out clearly and unmistakably."

Changing Hours and Conditions

Mr. Stewart took into consideration varying conditions in the industries obtaining in the years dealt with. In the case of iron and steel attention was given, among other things, to the shift to the 8-hr. day in 1923-24. Previously, the Bureau has dealt at length with this change and its reports have been published in THE IRON AGE.

In the present study of the four industries an index was constructed from the output of products of the industry, in accordance with two well known and recognized methods. First, is that concerning key products, including pig iron and ingots in the case of iron and steel; and secondly, weighted averages of the various products which are tied together. The weights used were: pig iron, 9, and steel ingots, 57, as used by the Bureau of the Census.

After explaining the means of getting an employment index for every year from 1914 to 1925, except 1915, in the iron and steel industry, Mr. Stewart took up the change in the hours of labor in the industry from 1914 to 1925, and adverted to reports of the Bureau on the subject.

Productivity of Labor in the Iron and Steel Industry, 1914 to 1925

Year	Production Index*	Adjusted Employment Index	Productivity Index
1914	100.0	100.0	100.0
1916	180.2	146.4	123.1
1917	188.1	165.2	113.9
1918	186.1	179.4	103.7
1919	145.5	150.8	96.4
1920	176.4	156.9	112.4
1921	82.5	88.5	93.2
1922	146.8	113.2	129.7
1923	188.7	144.3	130.8
1924	157.8	123.1	128.2
1925	189.0	126.6	149.3

*Production figures taken from the annual statistical reports of the Iron and Steel Institute.

8-Hr. Day and Its Effects

"Elimination of the 12-hr. day did not begin until August, 1923, and it was announced by the steel companies that the change would be gradual and would take considerable time," said Mr. Stewart. "Considering, then, that fully half the year was worked on the 1922 basis of hours, and that during the remainder of the year the reduction in hours was taking place gradually, it is probable that not more than one-fourth of the total eventual reduction took place in 1923. Accordingly, the working hours for 1923 were estimated on the principle that they were 25 per cent removed from 1922 hours and 75 per cent removed from the hours in 1924. This is probably a liberal estimate of the amount of reduction in hours during 1923.

"The index numbers of the various kinds of mills were then combined into a composite index of full-time hours for the iron and steel industry as a whole. Dividing the employment index by this full-time hours index gives an adjusted employment index, which is as close to actual man-hours as can be had from existing data. This does not make allowance for part-time or overtime work; it takes account only of the changes in standard full-time hours."

The final step in the computation consisted in dividing the production index by the adjusted index of employment, to obtain a productivity index. This is shown in the accompanying table.

Improvement of 50 Per Cent an Exaggeration

"The table seems to show that the output per worker in the iron and steel industry increased about 50 per cent from 1914 to 1925," said Mr. Stewart, "but this is undoubtedly an exaggeration of actual facts, for the year 1914 was one of severe depression, while 1925 was at least a good year, if not one of actual prosperity. In an industry so sensitive to good and bad times as the iron and steel industry, there is need for caution in drawing comparisons between depression and prosperity years, since there is in the figures no adequate adjustment for changes in man-hours due to changes in business conditions.

"But it will be noted that the production index for the industry is remarkably constant for all good years; for the years 1916, 1917, 1918, 1920, 1923 and 1925 the maximum difference in output in any two years is less than 13 per cent on a 1914 base or 8 per cent on a 1916 base. Taking into consideration these peaks only, the general trends in productivity stand out quite clearly.

"With the expansion of production and the introduc-

tion of new workers into the industry during the war years, the productivity fell markedly. The low index for 1919 is, of course, due to the strike in September of that year, and it is not at all improbable that the productivity for 1920, also, was influenced by the strike. The low index for 1921 was due to the depression of that year, when production fell off in greater degree than did the number of workers.

"But with returning prosperity the figures for productivity become more significant and, despite the abolition of the 12-hr. day, or perhaps because of it, the index reaches new high figures. In view of the fact that the index for 1914 is probably much too low for a fair comparison with the year 1925, it may be more satisfactory to use two-year averages in each case. Taking an average index for 1914 and 1916 as 100, the average for 1924-25 is 124.5. This makes an increase of about 25 per cent between the two periods."

Steel Treaters Prepare for September

Technical Program Partly Arranged—Eminent German Metallurgist for Memorial Lecture—S. A. E. and A. S. M. E. to Participate

PREPARATIONS are progressing rapidly for the eighth annual convention and steel exposition of the American Society for Steel Treating to be held in Chicago the week of Sept. 20. While the complete technical program has not been decided upon, a partial list of convention papers has been made public and is as follows:

"Wear Resistance of Carburized Steel Versus Cast High Manganese Steel" by W. J. Merten.

"Internal Stresses in Quenched Steel" by S. L. Hoyt.

"Graphitization at Constant Temperature Below the Critical Point" by H. A. Schwartz and H. H. Johnson.

"The Iron-Molybdenum System" by W. P. Sykes.

"The Nature of Oil-Hardening Non-Deforming Tool Steels" by E. C. Bain and M. A. Grossmann.

"The Decomposition of the Austenite Structure in Steels" by R. L. Dowdell and O. E. Harder.

"Some Notes on Fatigue Properties of Heat-Treated Carbon Steels" by J. M. Lessells.

"Cyanide Brittleness" by V. E. Hillman and E. D. Clark.

"Wear Testing of Gage Steels" by H. J. French.

"Notes on the A_3 Stable Transformation" by H. A. Schwartz.

"Dendritic Crystallization and Grain Formation in Steels" by V. N. Krivobok.

"Corrosion—Fatigue of Steel" by D. J. McAdam, Jr.

"Studies on Electric Welding" by L. J. Weber.

"Mechanical and Machining Properties of Annealed Cast Iron" by G. C. Priester.

"Use of Electricity in Heat Treatment Furnaces" by A. E. White.

"Failures in Bolt Steels" by V. T. Malcolm.

"On the Transformation of Retained Austenite into Martensite by Stress" by Kotaro Honda and Keizo Iwase.

"Krupp Nitrifying Process" by T. H. Nelson.

"Effect of Heat Treatment on the Properties of Stainless Iron at Various Temperatures" by P. G. McVetty.

"Aluminum Bronze" by Jerome Strauss.

"Standardizing the Brinell Hardness Test" by H. M. German.

"Correlation of Magnetic Properties with Mechanical Hardness in Cold-Worked Metals" by S. R. Williams.

"Hardness Testing Outfit for Steel Balls" by S. R. Williams.

"Basic Open-Hearth Practice" by C. H. Herty, Jr.

"Temperature Distribution and Heat Flow in Steel During Its Solidification" by A. L. Field.

"Hair Cracks in Steel Rails" by J. H. Whiteley.

The technical sessions will all be held at the Drake Hotel, which is the headquarters for the convention. The exposition is to be held on the Chicago Municipal Pier. This is 2280 ft. in length and practically 75 per cent of the equipment at the exposition will be shown in operation.

Metallurgical Education

A feature of the convention is a conference on metallurgical education, which is scheduled as a luncheon meeting at the Drake Hotel, 12.15 p. m. Tuesday, Sept. 21. The program will be divided into two parts: The metallurgical educational work by educational institutions and the metallurgical educational work by the chapters of the A.S.S.T. The discussion of the first part will be led by Prof. Bradley Stoughton, Lehigh University, Bethlehem, Pa., and the introduction to the second part will be presented by President R. M. Bird of the society.

Session on Steel Melting

The plan, so successfully started at the Cleveland convention last year, of holding a technical session devoted to the subject of steel melting will be continued this year. The program is under the direction of W. J. Priestley, Electro Metallurgical Sales Corporation, New York. Three papers have already been promised for this session and one or two more are expected.

First Campbell Memorial Lecture

The first Campbell memorial lecture is to be delivered at the close of the annual meeting on Wednesday morning, Sept. 22. Dr. William Minot Guertler, director of the Metal Institute of the Technical Highschool, Berlin, Germany, has accepted the invitation of the board of directors to deliver this lecture, which has been established in honor of the late Edward Mille Campbell, for many years head of the department of chemistry, the University of Michigan, and an honorary member of the society. The subject of Doctor Guertler's lecture will be, "On the Corrosion Resistance of Steel." It is stated that he will also appear on the technical programs during the last two days of the convention, delivering papers entitled "On the Hardness of Metals" and "On the Light Metal Alloys." Doctor Guertler will remain in the United States for about eight weeks after the close of the convention and deliver addresses before various educational institutions and chapters of the A.S.S.T.

S.A.E. Production Meeting

The Society of Automotive Engineers has arranged to hold its annual production meeting the same week as the convention of the steel treaters. The tentative program calls for technical sessions on Sept. 21, 22 and 23 at the Sherman Hotel, which will be the headquarters. Members will be invited to participate in all the activities of the steel treaters during the week.

The council of the American Society of Mechanical Engineers has authorized the society to participate in the annual A.S.S.T. convention in the form of a day's session on machine shop practice.

On June 1 American shipyards were building, or under contract to build, for private shipowners 159 steel vessels of 209,940 gross register tons, compared with 196 steel vessels of 213,046 gross tons on May 1, according to the Bureau of Navigation, Department of Commerce.

Unfilled orders of the Allis-Chalmers Mfg. Co., Milwaukee, as of June 30, aggregated $12,866,000 against $10,787,000 on March 31 and $9,668,730 on June 30 a year ago.

High Cost of Short Orders*

Small Lots Have to Bear Disproportionate Handling and Other Expenses Easily Absorbed by Large Lots

THERE are numerous unavoidable items of expense for booking every order for castings, irrespective of the number of pieces or total weight involved. The basic principles of merchandising and manufacturing are so well known that this general statement would be universally accepted without hesitation. However, the degree to which the several factors influence those cost items not related to quantity or to total weight are inadequately appreciated by many users of castings. This is due to lack of familiarity with foundry operations.

Every order received by a foundry is booked at an expense for accounting, comparable with the cost of doing similar work in other businesses. After this the similarity of charges incidental to ordinary manufacturing operations ceases to prevail, due to the expense items distinctly typical of plants making castings.

Expense Related to Patterns

A jobbing foundry is subjected to a pattern expense having little or no relationship to the volume of work called for. This is for handling the pattern equipment,

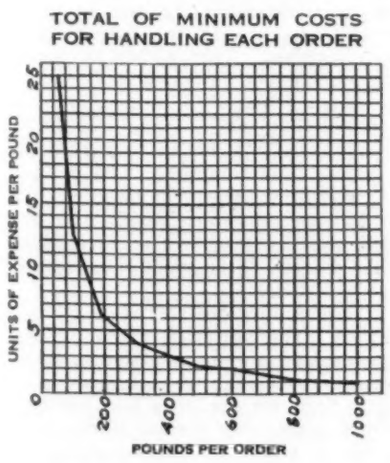


Diagram Illustrating the Influence of Weight on "Handling" Expense Per Pound

in securing this from the customer, or in removing it, preparatory to production, from the storage vaults of the foundry, where it has been temporarily placed for mutual convenience of customer and foundryman. The indirect expense attached to pattern storage is much greater than the direct expense, because of the costly nature of buildings suitable for pattern storage, and because of the elaborate system required for the recording of the movements and descriptions of all patterns, to facilitate quick identification.

Many consumers would be surprised if they could realize the large expenditures required for the purposes indicated. Pattern storage vaults in many relatively small foundries represent a money value that, while continually changing to slight extent because of the daily receipt and shipment of patterns, is always a large item as compared with the cost of any other equipment for making castings.

Inconveniences in Shop Routing

In the jobbing foundry the smallest order necessitates an expense for scheduling the manufacture of the casting. Such schedules are necessarily involved, and call for most careful preparation by experienced men, who have constant access to complete records showing the status of every order and the delivery requirements of all customers.

Ordinarily, it is as easy to schedule for production and shipment an order for 1000 castings as an order for a dozen. It is, in fact, easier to keep track of the castings requested in large numbers, through the various manufacturing stages, than it is in the case of a requisition for a few pieces of small or medium size, which are apt to become separated and misplaced in piles of other castings. The expense of following small orders is frequently excessive because of the nature of the parts, and the supervision required for locating every piece in each department concerned in the final delivery of the complete order to a customer in urgent need of the material.

It is not uncommon for a jobbing steel foundry of fair size, specializing in castings of small and medium size, to produce as many as 40,000 castings per month, and to have in all departments at one time as many as 10,000 castings. The difficulty of keeping track of a dozen castings that may be ordered from a small pattern by a consumer requiring prompt delivery can be reasonably appreciated when the large number of pieces constantly going through the shop is kept in mind, and when it is remembered that there are more than 20 skilled and semi-skilled occupations involved in the satisfactory execution of the average order for steel castings, within the limitations as to sections and weight typical of foundries similar to those in the Research Group. The occupations are listed below for the better understanding of the consumer:

1. Blacksmiths.
2. Blasters.
3. Carpenters.
4. Casting chasers (for order department).
5. Casting checkers (for samples, gaging, etc.).
6. Chippers.
7. Coremakers.
8. Crane runners.
9. Cutting torch-men.
10. Electricians.
11. Grinders (swing and stand).
12. Inspectors for general suitability of castings.
13. Laboratory assistants.
14. Ladle liners and driers.
15. Machinists.
16. Melters and furnace helpers.
17. Millwrights.
18. Molders.
19. Oven tenders (heat-treating, mold and core).
20. Pattern-makers (wood and metal).
21. Pattern storage tenders.
22. Sand mill operators (facing, backing and core sand).
23. Scale tenders.
24. Sprue cutters.
25. Steel pourers.
26. Straightening press-men.
27. Welders.

The above list excludes employees such as timekeepers, piece-work checkers, and others doing clerical work only. The list is arranged alphabetically, and not according to the relative importance of each occupation.

The cost of preparing bills of lading and other papers, relative to shipment and invoices for castings forwarded, is a separate item of clerical expense bearing considerable similarity to equivalent operations in many manufacturing establishments. While not distinctly characteristic of the foundry, such items involve an appreciable amount of labor that must be performed, in no proportion to the relative sales value of the material shipped.

Minimum Fixed Expense

Careful investigation of all the factors included in the necessary handling of an order, irrespective of its relative significance to the producer of steel castings, shows that the combined expense never amounts to less

*From "Research Group News," issued and copyrighted by the Electric Steel Founders' Research Group.

than $2.50 per requisition; and that this expense must be calculated on the basis of a high cost per pound when the order calls for a few castings having a combined weight of less than 200 pounds.

This is graphically shown in the diagram, which illustrates the influence of weight on what is termed "handling" expense per pound. This phrase is employed to include all the items of cost, above mentioned, which must be borne by the foundry and subsequently by the consumer as arbitrary details of production expense. These are readily absorbed when an order for many castings from one pattern is executed.

Rimmed Steel and How It Is Made

III—Character of the Slags and Casting Temperatures—Scums and What They Indicate—Extent of Segregation

BY HENRY D. HIBBARD

[The first and second sections of this series were published in THE IRON AGE, *June 24 and July 15. This is the concluding portion.]*

Slags

YEARS ago, when all open-hearth steel was made by the acid pig-and-scrap (Martin) method, the low-carbon steel—at one works at least to the writer's best recollection—effervesced in the molds and probably would have rimmed in well as a rule, but before it had time to do so it was covered with a steel plate and then sand. Red-short and pitted steels were both unknown at that plant, indicating thick sound skins on the ingots. The slags were vitreous and olive green or yellow, and contained about 50 per cent of silicic acid (SiO_2). Residual manganese was usually around 0.02 per cent at the end.

Later, at other works, when rimming steel became a recognized product and was made by the acid excess-of-pig method, a green or yellow slag was pretty sure to accompany a too-gentle boil, rising steel, thin-skinned ingots and skinholes. The proper slag in that practice was black and somewhat earthy, and contained some free oxide of iron. There was usually no residual manganese in the metal. None was specified in the pig iron, though most brands contained at least a few tenths of one per cent. Some brands of Swedish pig, however, which were used, contained several per cent. The slag on basic open-hearth steel is dark brown or nearly black and earthy, with silicic acid usually under 18 per cent.

Casting Temperature

The casting temperature of rimming steel is so important that more than one steel works in the past has come to grief and some to ruin through surface defects in their steel, due to skinholes, which were largely due to too hot steel. For the steel to be good, its temperature must be approximately correct when it is tapped and teemed, and that depends, of course, on the temperature of the laboratory or kitchen of the furnace, varied somewhat by the depth of the slag over the metal, which acts as a blanket.

Table I shows the proper temperatures for rimming steels in degrees Fahrenheit in ordinary practice:

Table I.—Proper Temperature for Rimming Steel in Degrees Fahrenheit

Carbon, Per Cent	Fusion Point	In Furnace Just Before Tapping	Entering Ladle	Teeming	
				Beginning	End
0.10	2768	2950	2940	2880	2820
0.20	2752	2930	2920	2860	2800
0.30	2734	2910	2900	2840	2780

A variation of 20 deg. Fahr. either way may not be seriously harmful, but it is well not to greatly exceed that.

When steel was made by the Martin process, and red-hot wrought iron blooms were added in batches to the bath, the heat of the metal was automatically regulated thereby. The charge was tapped soon after the last blooms to be added were melted and the temperature was right, though any great delay might have resulted in too hot steel. When steel is made from excess-of-pig charges, and consequently held for hours, after being all melted, during decarburization, the metal is in danger of becoming too hot, and the furnace temperature must be regulated accordingly to prevent this.

Proper Method of Casting

Rimming steel is either bottom cast in groups or top cast in single ingots. Bottom-casting favors proper rimming in, because the molds are filled relatively slowly, which accelerates cooling and so liberates the gases of effervescence at the proper time and rate, as already mentioned. This method is chiefly employed in making slab ingots, intended to be rolled at one operation to finished plates for boiler, ship or structure, for the reason that splashes and cold-shuts, which might form surplus defects, are thereby avoided.

Bottom-casting is also used sometimes with square molds for steel to be rolled into sheets in two or three operations, and for blooms containing about 0.25 per cent of carbon, which must have perfect surfaces, free from seams and other defects, to be made into certain forged or pressed steel articles.

For practically all other purposes this steel is top-cast into square ingots. The agitation given by the stream of steel in top-casting may be effective in some degree to wash away or dislodge the skinhole gas bubbles which start to form on the sides and particularly around the bottom, where they are out of the path of the incoming stream of metal in bottom-casting.

The Use of Aluminum

When the evolution of gas is right, and the steel tends to settle as it freezes, it will require some aluminum as stated, but none should be added until the mold is at least a third or half full, to allow maximum agitation of the metal so as to sweep off the forming skinholes on the sides as far down as may be. Assuming the ingots to be 5 ft. tall, top-cast, if the first one settles 6 in., an addition of 1 oz. per ton of steel to the others will usually cause them to rim in horizontally and have flat tops.

Other settling tendencies will take aluminum accordingly. The bath should be so dealt with in the furnace that the aluminum additions required will be between ½ oz. and 3 oz. per ton. Of course any settling due to aluminum is made up by more steel from the ladle. When made right, a 20 x 20 in. ingot should have 3 in. of solid skin free from skinholes and have but few, if any, central holes.

If the steel tends to rise, slow teeming is the only means available to check it, and that may fail to give good ingots. In some shops, when a heat of steel, intended to rim in, fails to do so properly, but rises instead in the first ingot, the other ingots of that heat are heavily dosed with aluminum—a pound or so to the ton—to kill the steel and prevent rising by preventing the formation of skinholes. The steel must then, of course, be applied to some other than the intended purpose.

In one large plant which makes rimming steel, a top-cast ingot is considered satisfactory if it either rises not more than 2 in. or settles not more than 1 in. It is, of course, better when it rims in level.

At one Bessemer plant, steel for skelp is held in the ladle 3 min. before being teemed. The effects of this are, of course, in a small way, to cool the metal and to allow it to clean itself.

In bottom-casting, the center runner should be at least a third taller than the height of the ingots, to give sufficient head to prevent gas from the metal blowing back up the runner. Ingot molds, when used for bottom-casting, last usually from 150 to 200 heats, while for top-casting they last from 75 to 100 heats, or about half as many.

Scum and What It Is

When well-made rimming steel is cooling and churning in the mold, a fluid scum gradually appears floating upon it as a sort of slag. It is chiefly silicate of manganese and iron with a little manganese sulphide, the last-named being, however, immiscible with the silicates. Table II gives analyses of various scums:

Table II.—Analyses of Various Scums

Sample	1	2	3	4	5	6
Kind of Steel	Acid O.-H.	Basic O.-H.	Basic O.-H.	Basic O.-H.	Basic Ingot Iron	Acid Bessemer
SiO_2	20.4	17.5	16.8	18.0	7.6	8.0
FeO	20.6	19.8	19.6	25.6	42.4	...
MnO	48.5	48.7	48.5	22.0	41.0	51.0
Al_2O_3	4.0	11.3	3.1	3.3	2.6	...
CaO	...	1.0	5.0	25.0	3.6	...
MgO	...	...	1.8	1.5	0.6	...
P_2O_5	...	0.06	0.06	1.5	...	0.09
TiO_2	...	0.2	5.5	...	...	...
S	...	0.17	0.06	...	...	2.50

The silica and alumina come in part from dirt, clay and brick fragments, which also rise to the top of the ingot and are dissolved in the scum. In sample No. 3 considerable titanium was added to the metal. In No. 4 the high CaO indicates that some slag got into the mold.

Trials have shown that this scum is derived in part from the oxides and sulphides in the steel, and in part from the oxidation of manganese and iron, chiefly the former, by atmospheric oxygen in the drops of molten steel which are thrown up by the rising gas bubbles and, partly if not largely, burnt to oxides before they fall back into the molten steel in the mold. These trials consisted in covering some of the molds of a bottom-cast group, leaving the others open to the air. When the ingots were cold, the scum was knocked off, collected and weighed. The amount on the covered ingots was usually between 2 and 4 oz. per ton of steel, and on the open between 5 and 10 oz. per ton, or from two to three times as much.

It was considered that the scum on the covered ingots came from the metal, while that from the open came in large part from oxidation by the air, as noted. The scum from the metal originally is in exceedingly minute particles, which gradually and progressively coalesce as they touch each other, due largely to the motion of the molten steel, until they become large enough to float to the top. When retained in the metal, as they usually are in partly killed steel, they are highly deleterious. Their separation constitutes one of the advantages of rimming steel, its ductility being thereby notably increased.

Segregation of the Elements

In rimming steel, the non-ferrous elements—sulphur, phosphorus and carbon—are prone to segregate and collect in the central and particularly the upper central parts of the ingot in well-known, if not well-understood, ways. One might assume *a priori* that the stirring motion of the steel in the mold would make it fairly uniform in composition, but such is not the case. The actual effect of the churning seems to be to wash away from the freezing shell of the ingot much of the rejected more fusible sulphides, phosphides and carbides, so that the still molten metal is made notably richer in those ingredients than that which is frozen.

After the central metal becomes mushy, the churning ceases, but there is some further settling of the solid particles and consequent upward movement of the fluid steel containing more of the elements named. The larger the ingot the more pronounced segregation will be, so that in one, 2 ft. thick, the upper central part may contain two or three times as much of those elements as the outer skin metal.

Chemical Structure of the Ingot

The chemical make-up of the ingot is, therefore, as follows: There is a thin outer shell of steel, a fraction of an inch thick, of practically the composition of the metal in the ladle. This shell has frozen so quickly that segregation has had no time to act. Next to this shell is a vertical zone, a few inches thick all around the ingot, of negative segregation; that is, the metal therein is purer than the average. Inside that the metal is more impure than the average, the upper parts being more so than the lower. Finally, the spot of greatest segregation is near the upper end of the axis. There is no negative segregation in this steel in the lower interior parts of the ingot as there sometimes is in large ingots of killed or nearly killed steel.

When a sheared strip of plate steel, made rimming, is soaked in half-strength hydrochloric acid for a week or so, the central more impure parts will be dissolved more than the purer skin metal, the acid penetrating deeply into the central parts, which will form layers. Sulphur prints of cross-sections of rimming steel practically always show the more impure central metal, due to segregation.

In making lap-welded pipes of sheared steel skelp, the segregated center may not be able to endure the welding temperature, say 1420 deg. C., but instead be so softened and weakened as to open up as a longitudinal crack near the weld, which might easily be mistaken for a defective weld. A sulphur print of a section across the weld will, however, show segregation to be the cause.

International Chamber of Commerce to Discuss Trade Barriers

Consideration of international trade barriers is to be one of the chief features of the fourth general congress of the International Chamber of Commerce which will be opened at Stockholm on June 27, 1927. An American sub-committee on trade barriers, headed by Julius H. Barnes, will submit a report on the difficulties encountered by American business in the promotion of foreign trade, gathered from a wide canvass of the country's business men. The principal artificial restrictions and impediments to international trade to be considered are unreasonable customs regulations, arbitrary import and export prohibition, unreasonable consular fees and procedure, tax discriminations, legal barriers affecting rights of foreigners, restrictions on transportation and shipping and governmental and private monopolies of materials and trade.

Cast Iron Pipe Production in 1925

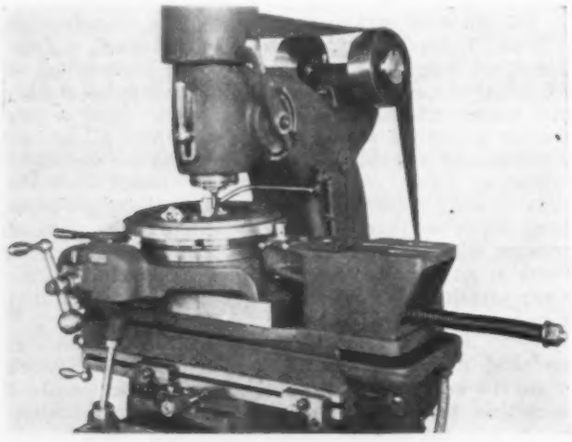
Revised figures have been issued by the American Iron and Steel Institute, New York, to cover the production in 1925 of gas and water pipe, including culvert pipe. The revised total is 1,414,252 tons, in place of the previously reported 1,813,564 tons. No change was made in figure for soil and plumbers' pipe, which remains at 510,483 tons. The total now becomes 1,924,735 tons, against the previously reported 2,324,047 tons.

In spite of the change, involving a reduction of practically 400,000 tons, the 1925 figure remains the largest ever reported. It shows an increase of 4½ per cent over 1924, which was the previous record, and is more than 20 per cent ahead of any other year.

The Trumbull Steel Co. reports that tin mills Nos. 1 to 6, which have been suspended for extensive repairs and rebuilding, have been completed in advance of the anticipated schedule. They have been equipped with heating furnaces, a new cooling and ventilating system, and mechanical doublers.

Contour Milling Attachment for Vertical Milling Machine

The Taylor & Fenn Co., Hartford, Conn., has developed an attachment for use on its vertical milling machine for milling cams and other pieces with irregularly shaped contours. The attachment is fastened directly to the power feed rotary table, and the required shape is produced from a former plate fastened to the table and is held against a roll by means of an adjustable spring. As the table rotates this former is feeding the work toward and away from the cutter. Speeds and feeds may be quickly varied to suit the requirements. It is claimed by the company that the use of this attachment gives many advantages over the ordinary profiling and vertical milling methods, this being due to high cutter speed and great flexibility.



The Attachment Is Fastened to the Power Feed Rotary Table

The company also builds a generating device for the shaping of the former from a model or sample of the work. A guide pin of the same diameter as to the cutter to be used is inserted in the spindle of the machine and the model is held against it by means of a spring. A milling cutter of the proper size replaces the roller against which the former is to travel, this cutter being driven by means of gears and a belt. As the table rotates the entire fixture moves back and forth against the guide pin in the spindle, thus controlling the cut that is being milled in the former plate.

Crane for Handling Non-Magnetic Plates

For shops, warehouses and especially glass plants where large plates and sheets of non-magnetic material, such as glass, copper, brass, aluminum, nickel, zinc, etc., are handled, the Deutsche Maschinenfabrik A. G., Duisberg, Germany, has developed a special type of crane. On the plates are placed several sets of convex shaped disks with rubber ring packing. From them the air is sucked so that the plates will hang on these disks. The company has installed the equipment on existing cranes. A rotary vacuum pump, driven by a 5-hp. motor and a tank kept at 0.1 atmospheric pressure, can be placed on the trolley frame.

A flexible hose line fitted with an electromagnetic three-way valve leads from the tank to the individual pipe lines with branches to the suction disks, and all is made into one lifting unit.

The procedure in gripping the plates is as follows: The hook and fixtures with attached disks as a single unit is placed upon the plate, possible shocks being absorbed through springs inserted in the convex disks. The switch of the three-way valve is actuated from the operator's cabin, and a connection is formed between the tank and the hollow of the disks. The partial vacuum in the tank then rises to about 0.2 to 0.4 atmosphere, due to air in the pipe line system. The pressure difference, however, is sufficient to hold the plate in place, since only 0.5 atmospheric pressure is figured necessary. The vacuum pump serves to reduce quickly the air pressure in the tank to 0.1 atmosphere, thus for security and also to equalize possible losses through leakage at the contact surfaces between disks and plate. A vacuum gage allows the crane operator and also the men in charge on the floor to read the degree of vacuum in the tank.

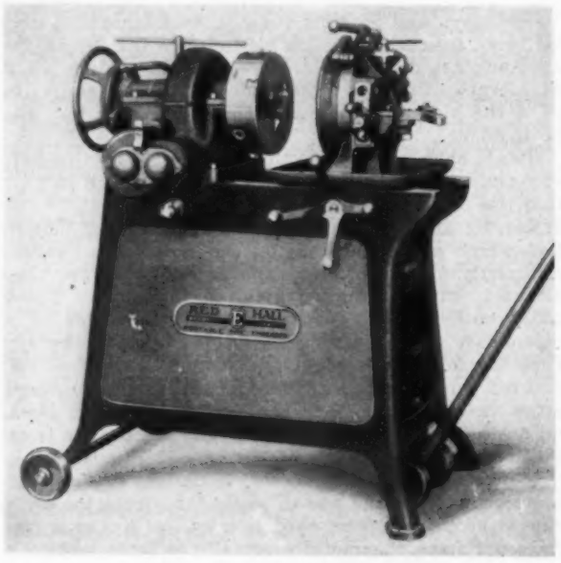
The unit below the trolley may be suspended eccentrically so that plates may be stored upright on special sloped tracks. It may also be set and adjusted into various positions or turned around its vertical axis.

Portable Pipe Threading Machine

The Hall-Will, Inc., Erie, Pa., has placed on the market a portable electric pipe machine, for handling ¼ to 2-in. pipe and ½ to 1½-in. bolts. It can also be used as a power unit, using universal shaft to drive hand stocks up to 12 in. While designed as a portable machine, it may be changed over quickly to a stationary machine. It is claimed capable of producing precision threads on a production basis.

The machine is light in weight, weighing 450 lb. It has a "built-in-truck," providing for portable operation. The rear feet of the machine are mounted on small wheels, while the front feet are provided with double swivel castors, which elevate the front of the machine when the handle is moved forward. If machine is not to be moved frequently, truck, wheel and castors can be dismantled.

A friction clutch, for stop and start, is operated by a lever handle on the top of machine, a handy arrangement for checking threads, trying on fittings and screwing up parts. The machine has a silent chain drive from a 1-hp. 1750 r.p.m. reversible motor, with push or turn button control. There are three speeds and the gears are nickel-chrome steel, heat treated. Close nipples can be threaded on the machine, it is stated, without extra equipment, using only the standard chuck on the machine. Adjustments for over-size and undersize threads have also been provided for, by turning two narrow nuts on the head bracket.



The Machine May Be Changed Over Quickly for Stationary Use. Precision work on production basis is claimed

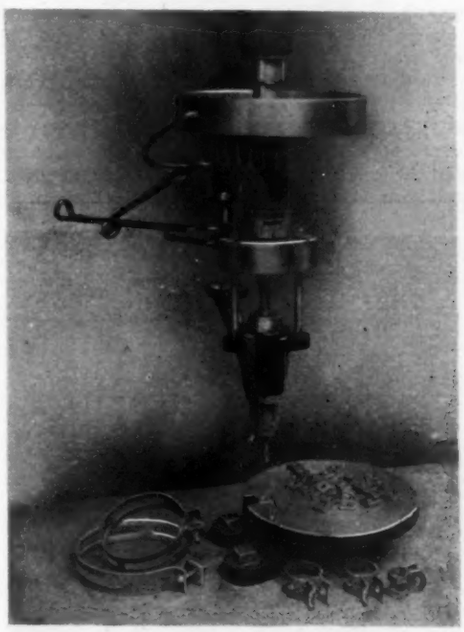
The specifications of the machine, which is known as the Red-E-Hall, include the following: Speeds, 19, 34 and 69 r.p.m. of spindle; carriage travel, 11 in.; shortest length of pipe cut off, 7 in.; floor space, 38 x 26 in.; height over-all, 43 in.; height, floor to center of spindle, 35¾ in.

Orders received by the General Electric Co. for the first six months of 1926 totaled $165,405,720, representing an increase of 10 per cent over the $150,315,228 booked in the corresponding six months of 1925, President Gerard Swope has announced.

Automatic Screw-Driving Machine

Designed for attachment to an ordinary sensitive drill, an automatic screw-driving macine is being placed on the market by the Metal Saw & Machine Co., Springfield, Mass. The machine is made to accommodate all styles of machine and wood screws, ranging from ¼ in. to 3 in. long.

After attaching the machine to the drilling machine, screws of the required size are poured into the hopper. The eccentric motion of this piece causes the screws to fall into a slot large enough to inclose their necks



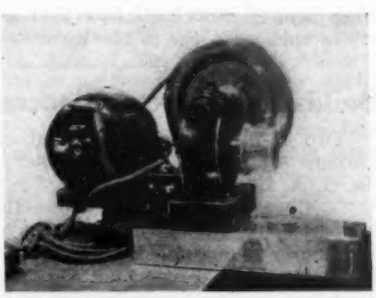
Screws Are Placed in the Hopper at Top and Feed Down Automatically, One at a Time, for Driving

loosely, but not to allow the heads to pass. The operator brings down the feed lever and, as one screw is driven rapidly into the work, another automatically takes its place.

Before the screw is driven, it is plainly visible to the operator. Consequently he may locate it easily at the required place on the work. As the screw drives itself into the work rapidly, it is necessary to follow it down smartly with the lever, otherwise the driver may be disengaged from the screw head before the screw is driven home. Faulty or superfluous screws, or partially driven screws, may be removed from the nozzle by a single attachment.

Testing Wire-Drawing Dies

Accurate tests of wire-drawing dies, showing the resistance to drawing, as measured in pounds, may be made on the diamond die tester illustrated. Readings



Diamond Wire-Drawing Die Tester. Readings are directly from a graduated dial

are directly from a graduated dial. The instrument is made by Robert Miller, 4725 Lancaster Avenue, Philadelphia, from designs of John L. Alden.

Testing individual dies for quality, detecting the troublesome die of a set and establishing standards by which to accept or reject new or recut dies are some of the uses of the instrument. The tension in wire drawing depends upon reduction of area, length of bearing of the die, shape of front and back cones of the die, smoothness of the die and lubrication. Conditions of the die may be studied by testing.

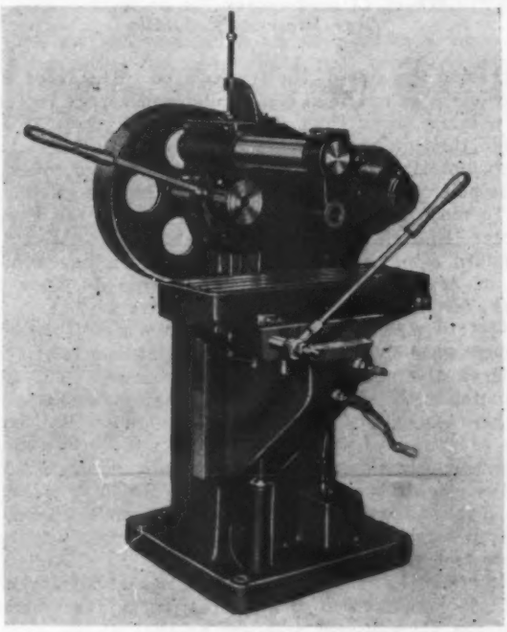
The instrument consists of a small drawing block, driven by motor at constant speed, and a dynamometer movement, which measures the force necessary to draw wire through the die. Dynamometers of two ranges are supplied, one measuring from 0 to 10 lb., for fine wire dies, and the other from 10 to 100 lb., for heavier dies. The instrument is strong and rugged, takes power from a light socket and is said to be not easily put out of calibration.

Heavy-Duty Hand Milling Machine

A heavy-duty hand milling machine, which, it is claimed, enlarges the range and size of work that can be handled by this method, has been placed on the market by the Kent-Owens Machine Co., Toledo, Ohio.

Taper roller bearings for the spindle, easily adjusted for wear and thus calculated to insure lasting accuracy, permit spindle speeds up to 2000 r.p.m., adapting the machine to the high speeds required for small diameter cutters and for suitable speeds to mill brass, aluminum and other soft materials.

The machine has been equipped with exceptionally long and adjustable hand levers conveniently located. Rapid and accurate adjustment of the work, it is stated



Taper Roller Bearings for the Spindle Permitting of Speeds Up to 2000 r.p.m. Are Among the Features

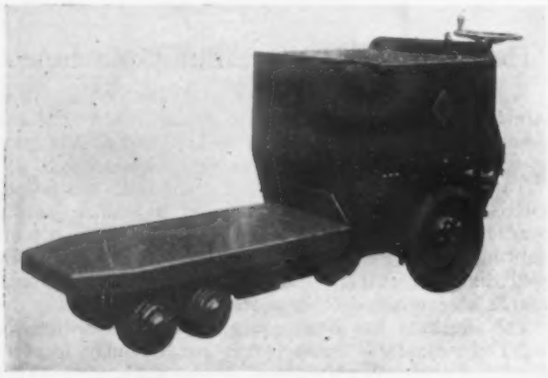
by the manufacturer, may be obtained by means of the graduated dials for cross-slide and vertical feeds.

The column of the machine has deep sections and is ribbed. In the base is a 4-gal. reservoir for the lubricant. The base is troughed for catching chips and oil. The work table is 28 in. long and 7 in. wide with two ⅝-in. T-slots. An oil channel surrounds the working surface, making the over-all dimensions of the table 32 in. long x 11 in. wide.

Maximum distance from spindle to table is 17½ in. The horizontal table feed, by hand lever, is 4¼ in. and the vertical feed of the head is 6½ in. The machine has a 22-in. table feed by crank and a 7-in. cross-saddle feed. Lever feed movements are adjusted by positive stops. The spindle is mounted on taper roller bearings front and rear. The overarm is of solid steel, 3½ in. diameter. The underside is 4¼ in. from center line of spindle. Overall floor space required for the tool is 38 x 60 in. The net weight is 2100 lb.

Lift Platform Truck for Loads Up to 10,000 Lb.

The efficiency of factory transportation systems has been materially increased during the past two or three years by the use of improved types of industrial trucks, the design of sturdier units able to withstand harder usage, and the development of new types of lift body and crane equipped trucks. The more extensive general use of trucks in handling material in production in manufacturing plants has been followed by a demand from manufacturers for trucks of larger capacity. In plants where a large amount of material in process has to be handled, there are certain obvious advantages in



Six-Wheel Lift Platform Truck With Worm Gear Steering Reduction

increasing the size of the trucks used. The labor item is reduced, as one man can handle much more material on a large truck than on a small one; there is less traffic through the aisles with the larger trucks, and more material can be stored in a given floor space on large platforms used with lift trucks than on small ones.

To meet the demand for larger trucks, the Elwell-Parker Electric Co., Cleveland, has brought out a standard 5-ton lift platform truck which has a number of new features as compared with its 3-ton lift truck, the largest size of standard truck that it has heretofore marketed. This is a six-wheel truck with a worm gear steering reduction. A steering wheel has replaced the steering lever usually used. The gear reduction in the steering mechanism is provided to make steering easier with a large capacity truck. Ball bearings are provided at both the upper and lower ends of the steering masts, and there are ball and socket connections to the wheel levers from the lower end of the mast. These levers are pressed and locked on tapered serrated lower ends of the steering mast and wheel knuckles.

In order that the truck can be used interchangeably with the company's 2- or 3-ton lift trucks, the platform is of the same height and size as that of the smaller capacity trucks. Its height lowered is 11 in., and raised 15½ in. Increase in the diameter of the front wheels to carry a heavier load would have necessitated a higher platform. To avoid the use of larger wheels, four front wheels, instead of two, are used. These wheels steer simultaneously with the drive wheels and also steer concentrically. The front axle racks, so that the four wheels can run evenly over an uneven floor. One problem in the design of the truck with the smaller diameter front wheels and limited clearance under the platform was to locate the wheel steering mechanism high enough so that it would not be damaged in service. By using alloy steel for the interconnections between the wheels the sizes of the parts were reduced so that there was room to locate the knuckle levers and their interconnecting levers between the axle and the under side of the platform.

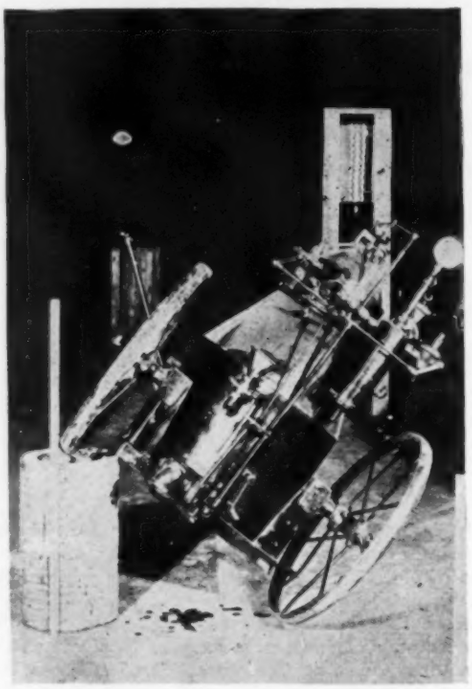
The truck has heavy frame members and a platform of heavier gage steel than the trucks of smaller capacity. In order to reduce weight and conserve battery capacity practically every working part is a drop forging or alloy steel.

The truck platform is 27½ in. x 60 in. The truck will turn in intersecting aisles 74 in. wide. Its speed is 240 to 375 ft. per min. The drive wheels are 22 in. x 4½ in. and the front wheel 10 in. x 6 in. Its weight is 4000 to 4800 lb., depending upon the battery used.

Tumble Tests of an Acetylene Generator

A portable type acetylene generator built by the Bastian-Blessing Co., 240 East Ontario Street, Chicago, has been tested by the Underwriters' Laboratories, Chicago, to show its safety and reliability under a number of extreme conditions. A reproduction of the photograph of one of these tests shows one wheel of a fully charged generator raised 21 in. without the generator's tipping over.

In another test the front end of the truck was raised 66 in. without causing a tip over. In another, the fully charged generator was thrown on its side and left for 15 min., and upon being returned to the proper position the gas valve was opened and the generator operated satisfactorily; it had been set to producing



Stability Test of Fully Charged Acetylene Generator. One wheel was raised 21 in.

gas at 10 lb. pressure before being thrown over, and water and gas were expelled through the blow-off valves without damage. In another test the generator carbide feed was locked and, upon being thrown on its side, the pressure in the generator did not build up and the machine was again put into operation on being brought into the upright position.

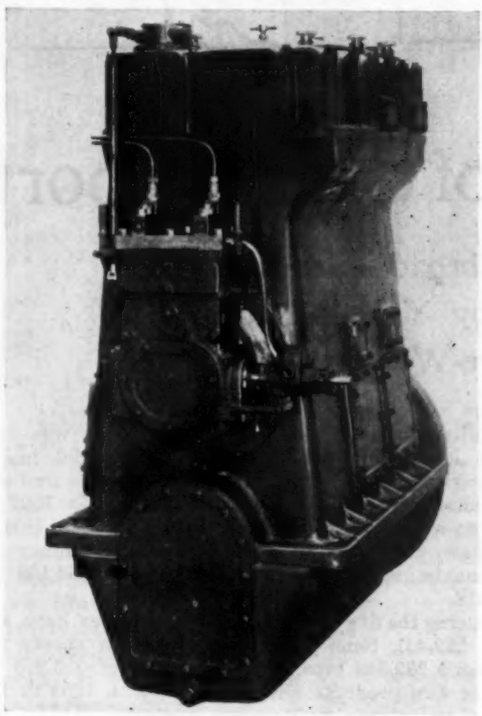
The company has developed the portable generator for medium pressure work with the idea that it has a large field of usefulness now that oxy-acetylene outfits are in such wide use in the metal-working industry.

Builds High Speed Planers for Germany

Two 36-in. planers, for operation at speeds of approximately 200 ft. per min., were recently built by the G. A. Gray Co., Cincinnati, for Schubert & Salzer A. G., Chemnitz, Germany, where the planers are now in operation. The German concern manufactures knitting and weaving machines, and the two new planers will be used for planing an aluminum alloy. General Electric reversing planer motors and control were used, the only modification being a change in the "cut" field rheostat to give a maximum speed of 1000 r.p.m. on the cut as well as the return stroke. The gear radio is such that this speed corresponds to a speed of 200 ft. per min. at the table.

Diesel Engine of Light Weight

Three features claimed for the new type-L Diesel engine, placed on the market by the Foos Gas Engine Co., Springfield, Ohio, are reduction in weight per horsepower, high speed range and complete inclosure of moving parts. As a self-contained independent power unit, this is said to offer possibilities of exceptional character. Our photograph shows the two-cylinder 65-hp. unit, which weighs 6000 lb. This is said to



Low Weight for Its Power, High Speed Range and Complete Inclosure Are Features Stressed in This Two-Cylinder, 65-Hp. Diesel Engine

be from 20 to 25 per cent lower than the weight of previous engines of the same power. It runs at 600 r.p.m. and is capable of continuous full load operation. Engines with from two to eight cylinders are made to this design, ranging from 50 to 475 hp.

In general the engine is applicable to drives for which comparatively high-speed gasoline engines have been used, and it is applicable to mobile or semi-mobile uses, such as industrial locomotives, locomotive cranes, power shovels, etc. The speed range is 400 r.p.m. to 900 r.p.m. The fuel injection nozzles are designed to allow use of low-gravity oils, and atomization of the fuel is secured by mechanical injection.

Metal Furniture Sales to Far East Increase

Sales of metal furniture by American manufacturers to the Far East have increased tremendously in the past several years, almost displacing wood furniture. In 1913 the value of wood furniture shipped from the United States to the Far East was about $700,000, while that of metal furniture was only slightly over $100,000. In 1925 the value of wood furniture shipped to that area had dropped to less than $160,000, while that of metal furniture had gone up to $800,000. Metal office furniture is becoming increasingly popular in the more advanced countries of the Far East.

The Department of Commerce, which reports these facts, also states that American safes had become very popular in Japan following the earthquake, but now Japanese companies have begun to copy both safes and steel-filing cabinets from American catalogs. As a result American sales of these items have dropped from $500,000 in 1924 to around $140,000 in 1925.

Higher Production of Steel Barrels

Steel barrels to the number of 626,812 were manufactured during June, according to figures collected by the United States Department of Commerce from 31 establishments. This is the largest figure for any month of which we have record, exceeding that for last March by less than 4000 units. It compares with 581,962 in May and with 514,913 in June of last year. Figures for 1924 and preceding years are very much lower. The statistics have been compiled since the beginning of 1921.

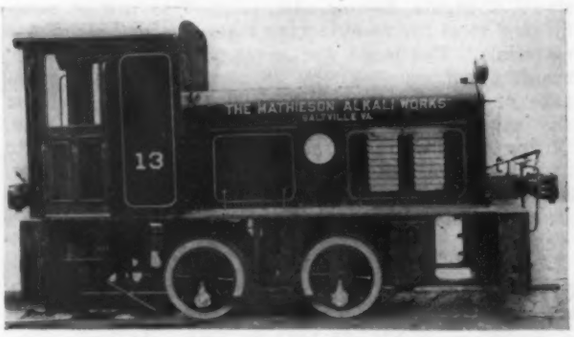
Shipments held close to production, as has been the case for many months. A new record was made here, also, though the excess over March was less than 1700 units. Stocks at the end of the month showed 46,751, a gain of 2730 since May 31. Stocks have held fairly consistently between 40,000 and 60,000 over the last two years. Unfilled orders at the end of the month increased by 90,000 to 1,300,113, of which 407,184 called for delivery within 30 days.

Capacity was used during June to the extent of 54.6 per cent, according to figures of the Steel Barrel Manufacturers Association, Cleveland. This is a gain of 3.3 per cent over May. Capacity of I. C. C. barrels utilized during the month reached 31.2 per cent, compared with 26.9 per cent for the preceding month, while that for light barrels was used to 60.0 per cent, as compared with 57.1 per cent in May.

Improvements in Gasoline Locomotives

Gasoline locomotives in all sizes from 8 tons up, equipped with elliptic springs and cross-equalizers, giving three-point suspension of the chassis, are being offered by the Vulcan Iron Works, Wilkes-Barre, Pa. With this design derailment is said to be a rare occurrence, inasmuch as the weight of the locomotive is always equalized on all the bearings, regardless of any unevenness or irregularities in the track.

Three-point suspension is standard practice on all steam locomotives. Vulcan electric locomotives are of



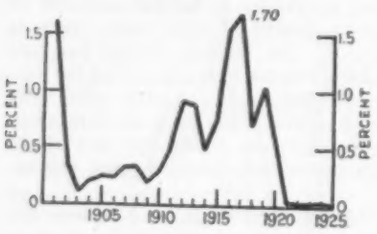
Elliptic Springs and Cross Equalizers, Giving Three-Point Suspension to Chassis, Are Provided

this design, and the heavy Vulcan gasoline locomotives (from 16 tons up) have always been so constructed. The idea is now being applied to the lighter units.

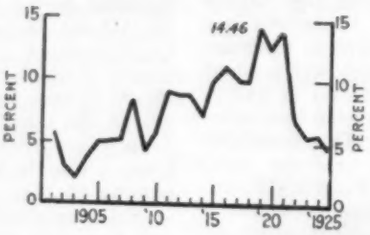
Booklet Commemorates John Scott Awards

Commemorating the recent awards of the John Scott Medal to Aldus C. Higgins and Charles H. Norton for their inventions, the Norton Co., Worcester, Mass., has published in de luxe form a hard-bound booklet, illustrated, which is being distributed to friends and customers of the company. The John Scott Medal was awarded to Aldus C. Higgins of the Norton Co. in 1914 in recognition of his invention of the electric furnace in which Alundum is made commercially, while in 1925 the medal was awarded to Charles H. Norton for his invention of grinding machines.

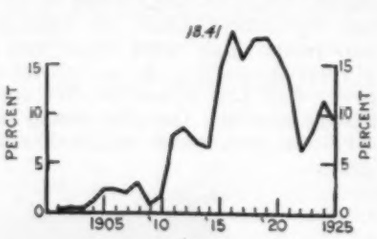
Exports of Pig Iron and Ferro-alloys Have Amounted in Late Years to Barely 1 Per Cent of Total Production



Exports of All Rolled and Finished Steel in Last Four Years Have Averaged 5½ Per Cent of Total Production



Against Less Than 1 Per cent of Output in the First Part of the Period, Tin Plate Exports Now Exceed 10 Per Cent



A Quarter-Century of Steel Exports

Nearly 60,000,000 Tons Sent Abroad—Great Changes in Characteristics Year by Year — Recent Tonnages Similar to Pre-War Average

COVERING the fiscal years 1901 to 1910 and calendar years thence through 1925, the tables herewith show exports of iron and steel products from the United States, as reported by the Department of Commerce. Overall figures covering all materials have been familiar from year to year. Changing characteristics making up those figures, however, form a basis for study. One outstanding feature is the movement of tin plate, which has increased from an average of less than 800 tons in the first three years of the quarter-century to an average of nearly 200,000 tons in the last ten years. Shipments of this commodity have aggregated 2,264,484 tons in 25 years.

Total exports have varied from a minimum of 310,143 tons in 1903 to a war maximum of 6,414,120 tons in 1917. In that year more than 2,000,000 tons consisted of ingots, blooms, etc., shipped as raw or semi-finished steel for manufacture into guns and other war materials. The large war tonnages persisted through the first two peace years, 1920 having shown an aggregate of 4,927,800 tons, or nearly twice as great as any other peace year, with the exception of 1919. During the five most recent years the total exports have averaged 1,954,863 tons. This compares with an average of 2,057,874 tons in the five years immediately preceding the opening of the war.

Movement of Particular Products

STEEL and iron bars, including alloy bars, have varied from a minimum of 31,711 tons in 1903 to a maximum of 848,524 tons in 1916. Average shipments during the five most recent years have amounted to 157,354 tons. This compares with an average of 151,078 tons in the five years, 1909 to 1913. Thus, there has been little change from pre-war averages.

Plates and sheets formerly were reported as one unit. Beginning with 1913, the reports show separate tonnages. The plate figures include skelp, while the sheets, in our table, include steel and iron, black and galvanized sheets. Such of the plate as was fabricated is included under structural material in 1917 and earlier. With this explanation the plate and sheet shipments have varied from 17,000 tons in 1902 and 1903 to a maximum of 1,273,557 tons in 1920, this figure having been more than 50 per cent higher than the maximum war tonnage, which was 854,136 tons in 1918.

During the five most recent years, plates have averaged 229,421 tons. In the same years sheets have averaged 280,849 tons, making a total of 510,270 tons for the two products. In the five years, 1909 to 1913, plates and sheets as a group averaged 351,052 tons. Thus, post-war shipments of these commodities are running nearly 50 per cent ahead of pre-war shipments.

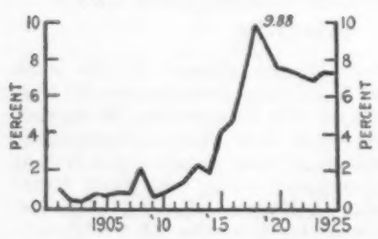
Tin plate in the five most recent years has averaged 126,245 tons. In the five years immediately preceding the war, shipments of tin plate averaged 43,533 tons, or barely one-third as much.

Structural material has been running behind pre-war shipments. In the five most recent years tonnage has been 200,125 tons on the average, compared with a pre-war average of 227,360 tons.

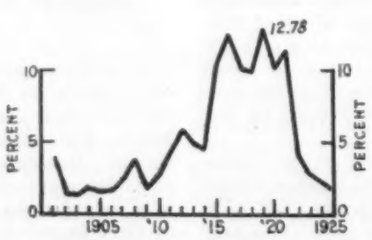
Rails, similarly, are running behind pre-war shipments. In the five most recent years exports have averaged 266,880 tons, compared with a 1909 to 1913 average of 386,321 tons, or nearly 50 per cent more.

Pipes and tubes, including cast iron pipe in 1914 and earlier, are running at about the pre-war rate. The inclusion of cast iron pipe in the earlier figures, however, makes it certain that present shipments of wrought pipe are considerably heavier than those of the earlier years. The average of the past five years has been 233,963 tons, compared with a pre-war five-year average of 208,475 tons.

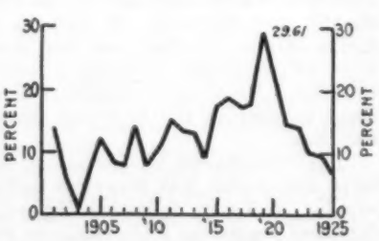
There has been a falling off in exports of wire and manufactures of wire. In the five most recent years the average has been 153,534 tons, compared with a pre-war five-year average of 192,265 tons. Nails and bolts,



How Large a Proportion of Production of Hoops and Bands are Now Exported Is Here Indicated



Recent Exporting of Steel Bars Appears to Average Close to the Pre-War Percentage of Total Output



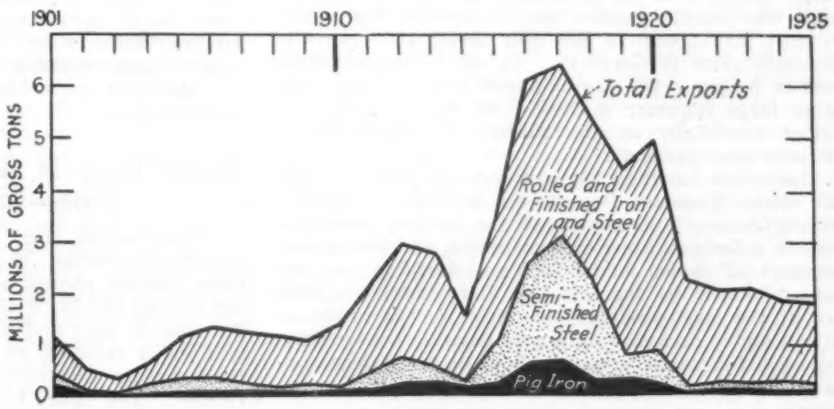
The Percentage of Rails Exported to Those Produced Fluctuates Considerably from Year to Year

United States Exports of Iron and Steel Products in Gross Tons

	Pig Iron and Ferroalloys	Scrap	Ingots and Blooms	Wire Rods	Cast Iron Pipe (a)	Other Castings and Forgings (b)	Total "Rough" Material	Total Rolled and Finished	Total Exports	Percentage Rolled and Finished
1901	255,253	32,770	121,136	9,177	.....	.....	418,336	707,874	1,126,210	62.9
1902	54,704	13,496	2,907	12,253	.....	.....	83,360	413,150	496,510	83.2
1903	18,198	6,043	2,127	31,857	.....	.....	58,225	251,918	310,143	81.2
1904	34,635	16,845	176,961	15,781	.....	.....	244,222	432,368	676,590	63.9
1905	56,971	19,710	236,155	15,738	.....	.....	328,574	805,011	1,133,585	71.0
1906	59,509	10,241	273,272	6,482	.....	.....	349,504	981,823	1,331,327	73.8
1907	85,000	22,152	113,866	10,250	.....	.....	231,268	998,977	1,230,245	81.2
1908	52,518	20,518	92,893	6,534	.....	.....	172,463	988,807	1,161,270	85.2
1909	50,178	29,029	109,331	12,715	.....	.....	201,253	857,986	1,059,239	81.0
1910	79,771	18,448	51,554	24,942	.....	.....	174,715	1,221,681	1,396,396	87.5
1911	120,799	77,918	234,267	22,641	.....	.....	455,625	1,724,305	2,179,930	79.1
1912	272,676	105,965	294,818	64,978	.....	.....	738,437	2,192,751	2,931,188	74.8
1913	277,648	97,429	91,847	61,637	.....	1,247	529,808	2,192,810	2,722,618	80.5
1914	114,423	33,134	50,496	61,857	.....	5,903	265,813	1,280,171	1,545,984	82.8
1915	224,509	79,361	560,704	165,014	47,022	15,863	1,092,473	2,437,861	3,530,334	69.1
1916	607,236	212,765	1,504,562	158,284	70,223	7,806	2,560,876	3,537,835	6,098,711	58.0
1917	656,220	145,574	2,017,113	181,974	77,528	8,403	3,086,812	3,327,308	6,414,120	51.9
1918	269,575	2,160	1,786,189	148,523	55,961	2,857	2,265,265	3,107,160	5,372,425	57.8
1919	321,261	27,275	258,424	118,010	39,455	3,385	767,810	3,627,234	4,395,044	82.5
1920	216,828	219,250	216,873	116,775	68,417	1,834	839,977	4,087,823	4,927,800	83.0
1921	28,307	37,592	10,171	18,953	48,524	615	144,162	2,065,702	2,209,864	93.5
1922	33,005	64,784	15,687	40,424	18,071	32,943	204,914	1,780,819	1,985,733	89.7
1923	37,427	65,980	7,352	40,868	28,065	39,031	218,723	1,791,448	2,010,171	85.1
1924	45,423	97,748	4,835	18,762	28,771	39,345	234,884	1,571,093	1,805,977	87.0
1925	38,170	82,573	4,271	21,203	32,193	37,433	215,843	1,546,729	1,762,572	87.8
Total	4,010,244	1,538,760	8,237,811	1,385,632	514,230	196,665	15,883,342	43,930,644	59,813,986	73.4

(a) Included through 1914, with wrought pipe and tubes; fittings are included in figures given.
(b) Not reported separately, in 1912 and earlier years; prior to 1922, most of this material was not reported in tons.

Though Pig Iron and Semi-Finished Steel Exports Closely Approximate the Pre-War Volume, Exports of Rolled and Finished Iron and Steel Are Roughly Twice the Average of the Earlier Years of the Quarter-Century Period



United States Exports of Finished Iron and Steel, in Gross Tons

(a)	Steel and Iron Bars	Steel and Iron Plates*	Steel and Iron Sheets†	Tin Plate	Hoops, Bands, etc.	Structural Material‡	Rails**	Pipes and Tubes§	Wire and Manufactures of	Nails, Bolts, etc.
1901	100,140		56,716	610	3,678	64,820	374,978	(b)	73,609	33,323
1902	35,700		16,977	1,074	1,741	61,190	167,456	(b)	99,641	29,371
1903	31,711		17,041	694	1,670	39,952	22,977	(b)	100,068	37,805
1904	44,115		25,080	3,620	2,839	35,884	162,407	(b)	113,856	44,567
1905	56,490		76,548	10,264	3,029	73,287	409,507	(b)	126,190	49,696
1906	65,325		88,828	11,592	5,042	97,668	345,826	147,497	164,253	55,792
1907	93,784		128,816	8,881	5,886	125,132	291,322	128,579	161,241	55,336
1908	76,193		102,531	15,010	8,560	134,299	278,867	168,591	156,960	47,796
1909	64,293		137,889	5,094	3,448	101,653	234,128	129,444	140,569	41,468
1910	106,547		235,052	11,682	5,239	120,228	369,578	163,777	155,998	53,580
1911	141,032		372,372	61,381	***	223,493	420,874	197,507	229,762	77,884
1912	230,139		546,521	81,694	12,557	288,164	446,473	249,856	244,712	92,635
1913	213,378	223,814	239,611	57,812	16,841	403,264	460,553	301,790	190,285	85,462
1914	128,235	111,642	168,454	59,549	9,954	182,395	174,680	199,622	180,869	64,771
1915	465,418	223,806	195,798	154,642	29,250	232,139	391,379	129,966	473,583	141,880
1916	848,524	276,034	239,524	227,391	43,208	300,594	540,828	158,350	683,024	220,358
1917	682,798	525,670	306,079	232,799	58,769	294,150	512,669	127,191	394,945	192,238
1918	642,616	581,217	272,919	258,538	50,673	232,729	453,537	89,982	392,305	132,644
1919	614,759	723,701	318,997	204,521	50,836	360,787	652,443	236,080	291,663	173,447
1920	675,679	963,788	309,769	226,410	53,449	493,633	594,628	284,771	320,679	165,017
1921	200,802	345,438	261,933	107,714	20,274	297,022	321,822	345,276	99,132	66,289
1922	185,253	195,135	335,930	76,633	34,512	167,585	305,166	179,239	209,668	91,698
1923	173,129	222,922	268,013	124,499	38,245	199,021	295,839	193,656	191,316	84,808
1924	107,330	183,961	267,899	160,997	34,141	167,767	234,381	211,975	145,512	57,130
1925	120,254	199,647	270,469	161,383	40,933	169,250	177,193	239,670	122,044	45,886
Total	6,103,644	(c) 5,823,775	(c) 4,212,766	2,264,484	534,774	4,866,106	8,639,511	3,882,819	5,461,884	2,140,881

*Includes skelp. †Includes galvanized. ‡Includes some fabricated plate in 1917 and earlier; also metal lath. §Includes cast iron pipe in 1914 and earlier. (a) Through 1910, the years end June 30; beginning with 1911, calendar years are shown. ***Not reported separately. (b) Reported by value only. **Includes rail fastenings, 28,076 tons in 1922; 28,430 tons in 1923; 25,885 tons in 1924; 25,503 tons in 1925. (c) On assumption that exports of first 12 years were divided between plates and sheets on same ratio as last 13 years.

at 69,162 tons, are slightly below the pre-war 70,206-ton average.

Rolled and Finished Material Compared with Rough and Semi-Finished

ALMOST three-fourths of the entire shipments have consisted in rolled and finished iron and steel. The total has been 43,930,644 tons, against 15,883,342 tons of rough material. The nearest approach between the two naturally was during the war. In 1917 shipments of rough material at 3,086,812 tons came within 8 per cent of the rolled and finished total of 3,327,308 tons. The maximum rolled and finished total, however, came later, with the 4,087,823 tons in 1920, constituting about 85 per cent of the total shipments of that year.

In the five most recent years the average total of rolled and finished material has been 1,751,158 tons, compared with an average in 1909 to 1913, inclusive, of 1,637,907 tons. The gain, therefore, has been only 7 per cent. During the same periods there has been a falling off in shipments of rough material, the most recent five years showing an average of 203,705 tons against an average in the five pre-war years of 419,968 tons, or more than twice as much.

Explanation of the decreased shipments of rough materials is found largely in the figures for pig iron and ferroalloys. In the most recent years the amount exported has averaged 36,466 tons, compared with a pre-war average of 160,214 tons, or more than four times as much.

Semi-finished steel, also, has contributed to the change in shipments of rough material, for the exports of ingots, blooms, etc., in the five recent years have averaged only 8,463 tons, against a pre-war average in five years of 156,363 tons. Wire rods have fallen from 37,383 tons to 28,042 tons. Scrap shipments have increased from an average of 65,758 tons to 69,735 tons.

DUMPING ACT MAY BE INVOKED

Gold Mark Permits Comparisons of Prices—Continental Export Quotations Decline

NEW YORK, July 20.—Investigation of the possibility of invoking the anti-dumping act on German steel imports is apparently being conducted, but no official action is as yet reported. One importer in New York was recently notified that an arrival of a certain product was about 18 per cent under the scheduled domestic price in Germany. As the consular invoice was in proper order the shipment was entered. Another large importer in New York was recently consulted unofficially on the subject of "dumping" of German steel products.

Importers handling German material point out that the recent Treasury Department decision on countervailing duties, later postponed for further investigation by a German-American committee, and the present prospect of action under the anti-dumping act are caused in part by the fact that Germany is the only one of the steel producing countries of the continent with a stable exchange on a gold basis. Consequently, export and domestic prices can be more accurately compared than in the case of Belgium, France or Luxemburg.

In support of this claim, they assert that in most instances German products are sold here at $1 to $2 per ton higher price than the same products originating in the other European countries. It is further claimed that a comparison of German domestic prices and the prices of German material sold to consumers in the United States is not an actual determination of price difference, as the qualities and specifications of these products are different. German consumers it is claimed, not only buy a considerable quantity of Bessemer grade, while most of the steel shipped to the United States is of open-hearth quality, but German users evidently prefer steel of higher carbon content and occasionally different physical tests than American buyers.

At present importers of continental material are quoting on a number of sizable tonnages of reinforcing bars and small structural steel projects both in the United States and to contractors and exporters for export to Mexico and South American markets. European export prices continue at a low level, but keen competition among importers and brokers with distress tonnages of bars and other material on their hands is claimed by some importers to be keeping the market on foreign steel in the United States to an almost unprofitable level.

Exporters to Japan report the Japanese domestic market on light gage sheets as equivalent to a price of about $75 per ton, c.i.f. Japanese port. This is evidently the current quotation of the largest Japanese maker, and according to cabled advices British mills are meeting this price on contracts for delivery after the settlement of the coal strike. In the meantime some small tonnages of German sheets are being taken by Japanese consumers for prompt shipment and most current requirements are being satisfied from domestic stocks and production.

Small orders for tin plate continue to come from foreign consumers to mills in the United States, but the export price has evidently changed but little. Thus far the leading interest has apparently been the foremost seller of export tin plate. In addition to the European business placed here as a result of the British strike, Japanese purchases of small lots have been fairly numerous, orders ranging from a few hundred boxes to 1000 base boxes. One large Japanese export house recently placed about 1500 base boxes for shipment to a Japanese manufacturer of crown bottle caps.

Sharp Drop in British Steel Exports in June—Imports Expand

WASHINGTON, July 20.—Attributed to the recent nation-wide strike, exports of iron and steel from Great Britain showed a decided drop in June, amounting to only 231,334 gross tons, as compared with 273,750 tons in May and 313,045 tons in April, according to a cable received by the Department of Commerce from Acting Commercial Attaché, Hugh D. Butler, London. The figure for June is by far the lowest for exports for many years. In contrast to this, imports rose in June to 233,399 tons compared to 166,636 tons in May and 261,787 tons in April. All items of exports showed decreases in June when compared to May, except pig iron, tin plate and railroad material. The percentage loss is about 15.5 per cent from May exports and a 26 per cent drop from the average monthly figure for 1925. Nearly all items except pig iron and hoops showed increases in imports in June over May. The June figure is slightly above the monthly average for 1925.

The most striking losses suffered in exports in June, as against May were in galvanized sheets, which dropped from 60,755 tons to 39,768 tons; plates and sheets, from 33,217 to 18,766 tons and rails, from 30,344 tons to 19,585 tons.

The cable states that with only 41,800 tons of pig iron and 32,800 tons of steel ingots and castings produced in the United Kingdom during June, the industry might be said to be practically shut down. Corresponding figures for May were 88,800 and 45,700 tons, respectively, as against 539,100 and 661,000 tons, respectively, in April and a monthly average in 1925 of 519,700 and 616,400 tons, respectively.

American ships have lost footing this year in their carriage of American exports. Clearances in the ten months ended April 30 totaled 14,893,000 tons (cargo capacity) in American ships, against 16,797,000 tons in ten months last year. Foreign ships, on the other hand, totaled 29,558,000 tons this year, against 28,705,000 tons last year. The ratio of American tonnage to foreign tonnage has fallen from 58.5 per cent to 50.4 per cent.

European Markets Show Improvement

Semi-Finished on Price Level with Finished Steel—German Steel Output Higher and Railroads Buy 500,000 Tons of Rails

(*By Cable*)

LONDON, ENGLAND, July 19.

PIG IRON is strong as a result of decreasing supplies, but sales are limited to immediate requirements. The Consett Iron Co. has blown out two hematite furnaces so that probably not more than five furnaces are now in blast throughout Britain, compared with 11 on June 30. Imports of foreign iron have been hampered by the recent Antwerp strike but considerable tonnages are expected to arrive shortly. Foreign ore continues quiet. Steel business is generally poor but there is some export inquiry for plates and shapes. The European Rail Makers Association is reported almost complete from various sources but no official intimation is forthcoming. Meanwhile German and French mills have been keen competitors on 12,000 tons of rails and accessories for Turkey, awarded to the DeWendel works.

Tin plate is quiet but stock material still brings about 25s. 6d. per base box, f.o.b. works port. Tin plate for shipment after the strike has sold at 20s. 3d. per base box, f.o.b. works port. Several more mills are closing but others are resuming on foreign fuel and sheet bars. Galvanized sheets are quiet but firm. Black sheets are inactive.

Continental markets are disorganized by further franc depreciation but semi-finished material has not been affected as works are booked heavily and prices are advancing. Consequently semi-finished sterling prices are generally higher than finished material. German railroads have placed 500,000 tons of rails with the Stahlwerksverband. On July 1, there were 52 furnaces in blast in Belgium.

BELGIAN BUSINESS IMPROVES

Buyers' Pressure for Concessions Slackens—Export Demand Better but Competition Keen

ANTWERP, BELGIUM, July 3.—The domestic steel market has registered a distinct improvement in the past few days, buyers having entered the market with the apparent intention of purchasing requirements for the immediate future instead of endeavoring to force prices to an unprofitable level to satisfy only their immediate needs. However, demand is still far from normal and many mills are still willing to grant small concessions from their original quotations in order to secure a backlog. Other makers, better situated from the standpoint of orders, have advanced prices and are adhering firmly to their new level.

In general, although there is a genuine improvement of the market, an upward movement of prices does not seem to be justified as yet. It is pointed out that costs are advancing rapidly, particularly fuel and wages, as a result of the depreciated franc. In addition to these direct increases in costs of production, new taxes have been imposed on industry to aid in restoring the financial structure of the country. Export prices of most products continue weak with Luxemburg mills still seeking tonnage for prompt shipment and willing to offer concessions and German competition keen.

Pig Iron.—Domestic prices continue to advance and even the export price quoted in pounds sterling has been advanced. Foundry iron is quoted in the domestic market at 530 to 540 fr. per metric ton, f.o.b. furnace and export quotations are £3 6s. to £3 8s. per metric ton, f.o.b. Antwerp. Semi-phosphorus foundry is scarce and ranges from £3 12s. to £3 13s. per ton, f.o.b. Antwerp.

Finished Material.—Inquiries from foreign markets are more numerous and generally develop into orders. Mills are quoting extended deliveries, much longer than for several months. As a rule, buyers show less inclination to press for lower prices and seem to be willing in most instances to close at the ruling market. The upward movement of export prices is meeting an

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British and Continental European prices per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalent figured at $4.86 per £ as follows:

Durham coke, del'd	£2	2s.				$10.20			
Bilbao Rubio ore†	1	1	to	£1	1¼s.	5.10	to	$5.16	
Cleveland No. 1 fdy.	4	10	and	4	10½*	21.87	and	22.00*	
Cleveland No. 3 fdy.	4	7½	and	4	8*	21.26	and	21.38*	
Cleveland No. 4 fdy.	4	6½	and	4	7*	21.02	and	21.14*	
Cleveland No. 4 forge	4	6	and	4	6½*	20.90	and	21.02*	
Cleveland basic (nom.)	3	15	and	3	15½*	18.23	and	18.35*	
East Coast mixed	4	0	and	4	1*	19.19	and	19.43*	
East Coast hematite	3	16	to	3	16½	18.46	to	18.58	
Ferromanganese	15	0				72.90			
*Ferromanganese	14	0				68.04			
Rails, 60 lb. and up	6	15	to	7	5	32.80	to	35.24	
Billets	6	10	to	8	0	31.59	to	38.88	
Sheet and tin plate bars, Welsh	6	5				30.38			
Tin plates, base box	1	0¼	to	1	6	4.92	to	6.34	
Black sheets, Japanese specifications	13	10	to	14	0	65.60	to	68.04	
						C. per Lb.			
Ship plates	7	5	to	7	15	1.57	to	1.68	
Boiler plates	9	5	to	11	0	2.00	to	2.39	
Tees	7	10	to	8	0	1.62	to	1.73	
Channels	6	15	to	7	5	1.46	to	1.57	
Beams	6	10	to	7	0	1.41	to	1.51	
Round bars, ¾ to 3 in.	7	12½	to	8	2½	1.65	to	1.77	
Steel hoops	10	10	and	11	0*	2.28	and	2.39*	
Black sheets, 24 gage	11	0	to	11	5	2.39	to	2.44	
Galv. sheets, 24 gage	16	10				3.58			
Cold rolled steel strip, 20 gage	18	0				3.91			

*Export price.
†Ex-ship, Tees, nominal.

Continental Prices, All F.O.B. Channel Ports

Foundry pig iron: (a)								
Belgium	£3	8s.	to	£3	9s.	$16.52	to	$16.77
France	3	8	to	3	9	16.52	to	16.77
Luxemburg	3	8	to	3	9	16.52	to	16.77
Basic pig iron: (a)								
Belgium	2	16	to	2	17	13.60	to	13.85
France	2	16	to	2	17	13.60	to	13.85
Luxemburg	2	16	to	2	17	13.60	to	13.85
Coke	0	18				4.37		
Billets:								
Belgium	4	10	to	4	15	21.87	to	23.08
France	4	10	to	4	15	21.87	to	23.08
Merchant bars:						C. per Lb.		
Belgium	4	12½	to	4	14	1.01	to	1.03
Luxemburg	4	12½	to	4	14	1.01	to	1.03
France	4	12½	to	4	14	1.01	to	1.03
Joists (beams):								
Belgium	4	11½	to	4	13	1.00	to	1.02
Luxemburg	4	11½	to	4	13	1.00	to	1.02
France	4	11½	to	4	13	1.00	to	1.02
Angles:								
Belgium	5	2	to	5	4	1.12	to	1.15
⅛-in. plates:								
Belgium	5	7½	to	5	10	1.19	to	1.21
Germany	5	7½	to	5	10	1.19	to	1.21
⅛-in. ship plates:								
Belgium	5	0	to	5	2	1.10	to	1.12
Luxemburg	5	0	to	5	2	1.10	to	1.12
Sheets, heavy:								
Belgium	6	3	to	6	4	1.35	to	1.37
Germany	6	3	to	6	4	1.35	to	1.37

(a) Nominal.

obstacle in the competition of Luxemburg makers, who continue to quote low prices and show a willingness to make concessions. The Belgian price for bars is £4 13s. to £4 13s. 6d. per ton f.o.b. Antwerp with a few mills refusing to accept business for export at less than £4 14s. to £4 15s. per metric ton. Beams are quoted at £4 12s. 6d. to £4 13s. with German and Luxemburg competition at £4 11s. 6d. to £4 12s. per metric ton.

GERMAN TRADE BETTER

Production Rate of Steel Syndicate Increased—World Market Prices Below June

BERLIN, GERMANY, July 1.—The steel industry as a whole shows signs of considerable improvement, and reports from other European steel producing countries indicate a similar increase in activity. With the exception of the coal industry, German business has profited but little from the British strike. The daily production of German coal has increased by about 8.50 per cent since the beginning of the British strike and the Polish mines have also profited by the increased demand as a result of British inactivity.

The actual improvement in demand is reflected in the decision of the Ingot Steel Syndicate to reduce the production by only 32.50 per cent for July instead of 35 per cent, the percentage which has prevailed for more than a year. Deliveries on most products are slightly extended but prices show but little tendency to advance. The domestic market on steel bars is active and the export market is apparently holding at £4 17s. to £4 18s. per metric ton, the schedule of the German Bar Iron Export Syndicate, despite occasional selling by French and Belgian mills at £4 15s. per metric ton and less.

The domestic market on semi-finished material is quiet but exports of semi-finished products to Britain have increased. The structural steel market is quiet as a result of over stocking by merchants and fabricators. Manufacturers of railroad material are still awaiting new orders from the State railroads and the contracts of several months ago are being steadily completed. Depreciation of the franc has been a continued obstacle to the development of much export business by Germany and exports to Britain have been considerably curtailed by the reduction in traffic of British railroads as a result of the strike. Demand for mine rails is quiet but grooved and girder rails are more active. Profit from the latter, however, is confined to the Rombach and Phoenix works, the only makers.

The export bounties paid on materials entering into the manufacture of finished equipment for export, have been increased. The world market prices for July as determined by a conference of producers and consumers register a marked decrease from the June level.

Prices in Marks per Metric Ton

	July	June
Ingots	76	90
Blooms	80	92
Billets	83	95
Structural shapes	93	95
Steel bands	120	122.50
Sheets, heavy	110	112

The world market prices established on other products are the same as in June. In general the world market prices established for July are materially lower than the pre-war level, so that in view of the higher wages being paid in Germany and increased costs of production, correction of this difference between domestic and export quotations, is considered to be justified. At the same time, it is generally conceded that European export manufacturers as a whole are receiving their raw materials at abnormally low prices, which permit them to compete successfully with American manufacturers of machinery and equipment.

FRENCH AWAIT STABLE FRANC

Fluctuating Exchange an Obstacle to Business—Stocks of Pig Iron Increased

PARIS, FRANCE, July 2.—It was believed for a short time that an effort would be made to stabilize the franc at 170 to the pound sterling but a growing lack of confidence in efforts of the ministry to improve the financial situation is resulting in still lower levels. French industry continues in a chaotic condition as a result of this rapid fluctuation of the franc and is impatiently awaiting stabilization of the currency regardless of the level decided upon. Recently domestic business has been small, neither buyer nor seller apparently being inclined to contract in a market which may change suddenly as a result of a fluctuation of the exchange. The larger producers, however, are well covered for the next three to four weeks and not inclined to make concessions.

Coke.—Large consumers of coke have been informed that in the future they will receive German coke on a new plan. Coke and coking smalls will no longer be regarded as indemnity material, but will be shipped as free trade merchandise to be accepted as deliveries "in kind" and paid for by the consumer. This represents an advance of 40 to 50 fr. per ton from the present indemnity rates, indemnity coke being credited by the Reparations Commission at 20 gold marks per ton, or 3 marks more than its value in Germany. Whether consumers in France will pay this advance in price or seek other sources of supply remains to be seen.

Pig Iron.—Demand is satisfactory, but a considerable part is of a speculative nature, foundry consumers evidently having but little confidence in the future. It is reported that some consumers have sufficient iron in stock to carry them to the end of the year. The base price of phosphoric iron continues at 460 fr. for July, but with higher coke and other costs, an advance is expected and consumers are continuing to increase their stocks. Semi-phosphorus foundry is quoted at £3 5s. to £3 6s. per ton for export to the United Kingdom and £3 2s. to £3 3s. per ton, for Italy.

GERMAN MERGERS CONTINUE

Upper Silesian Companies Combine—More Join Pig Iron Syndicate—Machinery Merger

BERLIN, GERMANY, July 1.—Activity continues in the formation and renewal of syndicates. At a recent meeting, the Pig Iron Syndicate was renewed for five years and negotiations have been instituted to include in the membership the Ilseder Huette, A. G. at Gross-Ilsede with six furnaces and Storch & Shoneberg A. G. at Gosenbach, Siegerland, with three furnaces. The Hoesch Eisen & Stahlwerk at Dortmund with seven furnaces has joined the Pig Iron Syndicate unconditionally.

In Silesia, the Upper Silesian Steel and Engineering Corporation has been formed with headquarters at Gleiwitz, Upper Silesia. The companies included in the merger are the Oberbedarf A. G., Donnersmarck-Huette A. G. and the Oberschlesische Eisenindustrie A. G.

Satisfactory progress is understood to have been made toward the formation of the International Tubes Syndicate. While many points have been settled in the negotiations, the participation quota of the various members has not yet been agreed upon.

Although the United Steel Works has not absorbed any other companies since its formation, more mergers are evidently expected. That the Buderus Steel Co. is one of the expected absorptions is indicated by the recent rapid rise in Buderus stock.

The United Steel Works, for the present at least, is confining its operations to a horizontal production plan, ranging from coal and pig iron through to finished steel products. The engineering interests of the subsidiary companies are being transferred to the Deutsche Maschinenfabrik, but the formation of an Engineering & Machinery Corporation on lines similar to the United Steel Works, is being seriously considered. No progress has been made toward the formation of the proposed corporation to include large electric manufacturing companies, merged on a basis similar to the United Steel Works.

BOOK REVIEWS

Metallurgy and Its Influence on Modern Progress. By Sir Robert A. Hadfield, Bt. Pages XVI + 388, 6 by 9¾ in.; illustrative full page plates, 70. Published by D. van Nostrand Co., New York. Price $7.50.

For over 40 years Sir Robert A. Hadfield has been investigating and working with ordinary and special steels. During this time he has contributed about 150 articles and papers describing his results or discussing the work of others. His name and the products of his firm are known wherever steels are made or used. In many respects the history of modern alloy steels begins with his work on the influence of manganese on steel and the discovery and description of manganese steel, freely and fully described in 1888.

Much of his work and experience is summed up in the book under review which is, however, evidently intended for a wider circle of readers than his technical papers, the language being so far as possible non-technical in character.

The book is divided into five parts. Part I deals with historical matters, the three short chapters being headed: Birth of Science, Rise of Steam and Twentieth Century. It gives an interesting account of early workers; little on metallurgists but much on chemists and engineers. Roger Bacon and Sir Francis Bacon are given considerable space. The inspiring nature of the book is quickly apparent on reading these first chapters and the inspiration continues to the last pages.

Part II is on the main subject, Metallurgy, its seven chapters being: Importance and Antiquity of Iron, Carbon in Simple and Alloy Steels, Rise and Importance of Alloy Steels, Manganese Steels, Silicon Steels, Heat Treatment and Microstructure of Steel, and Applications of Special Steels. This part covers 155 pages. Its first chapter contains a splendid picture of the famous iron pillar at Delhi, probably made about A. D. 300. It is very interesting as to archaeology, early metallurgy and metallurgists and closes with graceful references to modern workers. The chapter on carbon in steels is very clear and good. It is not exhaustive nor particularly up to date. The succeeding chapter on the rise and importance of alloy steels is also most interesting. Emphasis is put on manganese steel and an account given of early experiments and experiences. Attention is drawn to the great importance of ferroalloys and there is a most interesting section on magnetism and the magnetic properties of steels.

The following chapters on manganese and silicon steel, respectively, are naturally treated in an authoritative and splendid way. Many excellent illustrations are given, chiefly on the uses of these steels. There is a complete section on the magnetic properties of silicon steels, and an extremely good one on the difficulties of commercial production and industrial application of special steels. An impressive feature is the estimated saving to the world, due to the introduction and use of silicon steel. Dr. Yensen of the Westinghouse company arrives at the figure of 240 million dollars down to the end of 1920. The chapter on silicon steel is exceedingly good and most interesting.

The chapter on heat treatment and microstructure is short but good, with well chosen illustrations. The last chapter in this part, on the applications of special steels, considers special steels to be either alloy steels or ordinary steels given heat treatment. There are clear pictures and good sections on non-rusting steels and steels to withstand high temperatures and scaling.

Part III, of 47 pages, consists of one chapter on fuel economy. While written for British readers primarily, it is of general application to all steel makers or users of industrial furnaces. It is an excellent chapter. There are good sections on fuels, flame temperatures, design of furnaces, pyrometry, possible economies in steel plants and fuel conservation generally. One of the two errors noticed in carefully reading the book is on Plate 57 where "repeating" should be "reheating" furnace. This chapter on fuel economy is more technical than the rest of the book, and is most helpful and useful.

Part IV has four chapters dealing with education and research. The first chapter has another inspiring introduction and then deals almost entirely with the Royal Society. The second chapter deals with educational facilities, chiefly in Great Britain; the third takes up in some detail the scientific and professional societies of Great Britain, while the fourth develops into an interesting discussion on research.

Part V is a brief discussion of possible future developments followed by five appendices, one of them being an 18-page translation of a remarkable Latin poem written by a French Jesuit father about 1707 entitled "Ferrum."

Enough has been said to show that the book covers a very wide field. It is printed in large clear type, and can be recommended to all metallurgists, engineers and the general public interested in both the older and more modern applications of science.

G. B. WATERHOUSE.

American Petroleum Supply and Demand. Report to the board of directors of the American Petroleum Institute, by a committee of eleven members of the board. Pages 269, 6 x 9 in.; plates, x. Published by the McGraw-Hill Book Co., New York, Price $3.

This serious work upon an important industrial subject arrives at the conclusion that there is no serious imminent danger of exhaustion of our petroleum reserves, that we will have sufficient reserve for national defense and industrial use; that price will correct overbalance between supply and demand; that recoverable petroleum from existing wells and acreage consist of 5,300,000 bbl. of crude oil; that 26,000,000,000 bbl. may be recovered by flooding, etc., that deeper fields will be discovered; that there are 1,100,000,000 acres of not fully explored lands with possible oil therein; that we have additional reserves in oil shale, coal and lignites as sources of oil; that there are also great quantities of oil near by and available; that the supply can be made to go much further by improved methods of utilization, and by new cracking processes; finally (most important) that waste in the production, transportation, refining and distribution of petroleum and its products is negligible.

Kettering and Horning think it possible to make automobiles go twice as far per gallon of gasoline, as now, that is, 40 miles per gallon with small cars. Improved refining and better automotive engines should reduce the fuel demand by nearly 25 per cent by 1950. Diesel engines are expected to replace 90 per cent of the present fuel oil equipment by 1975. The popular gas engine now utilizes only about 25 per cent of the crude; the Diesel 100, while it has 50 per cent higher thermal efficiency. A vessel equipped with Diesel engines will go six times as far with a given amount of oil as if the oil were burned under boilers.

The diagrams in the latter part of this book are among the most complete and valuable that I have seen for a long time. An excellent alphabetical index adds value to the book as a work of reference.

ROBERT GRIMSHAW.

Population Problems in the United States and Canada. Edited by Louis I. Dublin. Pages 318 + xiii.; 5½ x 8 in. Illustrated. Published by Houghton Mifflin Co., Boston and New York, 1926. Price, $4.

Dealing with problems of population, one does not have to subscribe to the Malthusian theory of a doubling of numbers every quarter century. That condition was observed in the United States during the first century of its independence, but for many reasons it no longer obtains. In the present instance the problem is taken up from several detached points of view,

in the shape of nineteen correlated articles written by as many independent investigators.

Mr. Dublin, who is a statistician of the Metropolian Life Insurance Co., contributes the introductory chapter. Following this, the work is divided into five parts: statement of the problem; population and natural resources; population and immigration; population and labor supply; outlook for the future. Each of these parts consists of three to five articles prepared by acknowledged authorities. The work closes with an article on the trend of population with respect to a future equilibrium, based upon an analysis of fertility ratios in different social groups, as shown by successive census figures in Great Britain.

A reduction in birth rate is regarded as not improbable, several reasons being adduced for this viewpoint. Thus, even if the average size of a family remains unchanged, the change in age distribution to one less favorable to reproduction will lower the birth rate. All of this indicates that the change needed to stop natural increase, with mortality constant, would be relatively slight.

Something of the problem with regard to increasing population is brought out by the statement that, during the 800 years from 1000 A. D. to 1800 A. D., the white race increased from 30,000,000 to 210,000,000, while in the next 115 years (to 1915) the gain resulted in a white population of 645,000,000. This gain in 115 years was considerably more than double the gain of the previous 800 years. Low death rates, brought about by increasing knowledge of sanitation, and preventive and curative medicine, have contributed heavily to this result, and would do even more in the future were it not for the steady decline in birth rates all over the world.

The problem of feeding a much increased population ties back to the disinclination of many of those born on the farm to remain there. Ultimately, of course, demand for food will make the farming profession a profitable one, although many years may pass before the condition so changes as to stop the migration from farm to city. S. G. K.

Moderne Metallkunde in Theorie und Praxis. Von J. Czochralski. Published by Julius Springer, Berlin W. 9, Germany. Pages 292, 5 x 8 in.; illustrations, 298.

The title is somewhat of a misnomer in that many branches of metallurgy are not treated, at least very fully. But such lines as the texture of metals and the technology of castings are handled in general, because without accurate understanding of the conditions governing texture formation, no thorough technical knowledge of metals would be possible. The author emphasizes Gibbs' coined expression "phases" to indicate the different stages through which a metal passes from the molten to the solid state, including the allotropic and polymorphic forms and all physical degrees from solid through liquid to gaseous states.

Following this introduction the author takes up the solidification diagrams of binary alloys. Passing from consideration of eutectic and solidifying diagrams, technical alloys are shown diagrammatically and by microphotographs. The temperatures of re-crystallization are handled in chapter VII as regards speed and number of crystals under differing conditions; the author availing himself of the researches of Rassow, Velde, Oberhoffer and Oertel. Chapter IX takes up Roentgen work with the very rich selection of Laue diagrams made by Rinne and others. The latter part of the chapter is devoted to consideration of the flow of metals, first brought to public attention by Tresca.

Chapter X, on the principles of the strengthening of materials, goes on to destroy many hypotheses and some theories on the subject. In testing multicrystalline materials the tensile strength and extension are in inverse relation; but the high limit goes with medium extension, and the high limit of extension with medium tensile strength. Even in the matter of hardness, the results of tests differ according to the position of the crystals.

The handling of the important topics of hot and cold forging is new and thorough; utilizing the contributions of Goerens, Bengough and the author's own. ROBERT GRIMSHAW.

Can We Compete Abroad? By C. C. Martin, chairman Foreign Credit Exchange Committee, National Association of Credit Men. Pages 155, 5½ x 7¾ in.; bound in paper. Published by the National Foreign Trade Council, India House, New York.

Much has been written about foreign trade from an economic or a technical standpoint, but this book approaches the subject in a practical manner. The writer, who has been actively engaged in business in many European countries and has traveled widely in Latin America, tells the story with facts and figures that may be grasped readily and offer convincing proof.

Many chapters furnish evidence that the United States has been able to maintain in many markets the position it gained as a result of the war, in spite of predictions of a speedy return to pre-war conditions. Authorities are quoted and figures cited, and a fine tribute is paid to engineers, financial experts and medical men who helped to establish good will for America in foreign countries. Mr. Martin sees the reason for this phenomenal increase of our foreign trade during the last decade in the application to foreign markets of the competitive methods of selling used at home. "Abroad as at home," he says, "the same factors operate in creating a sale: quality, prestige, price, friendship, influence, service, style, quick delivery, ability to sell, advertising, novelty, adaptability, production, habit, accessibility, and innumerable other factors." Under these conditions he looks into the future with confidence.

"If," says the author, "we can manufacture a new product that will fill in during the slack season, if we can take advantage of a foreign market where demand emerges at the time it decreases in this country, if statistical work can adapt production to market, and if we can do other things of a similar character to balance production throughout the year, we shall do much to decrease costs. In sum, the answer to this question of costs will be found in reduction of overhead, more efficiency and lower selling expenses.

"The foreign situation does not differ from the domestic. We have spent millions of dollars in experimentation with foreign trade, just as we have spent millions at home. But today we are obtaining a great deal of exact knowledge covering foreign countries and trade conditions, and this knowledge of selling, economics, competition, needs of the people, and so on, will go far to lower our foreign costs and increase our turnover with resultant decrease in overhead."

The Story of Copper. By Watson Davis, C. E. Pages 385, 5 x 7 in.; illustrations numerous. Published by Century Co., New York. Price, $3.

Probably a great many writers and others know as much about copper as the author, but I doubt if one in ten could put his knowledge in as entertaining, withal authoritative, manner.

The discovery, winning and gradual use of copper, "man's key to civilization," alone and in combination with other metals, especially tin and zinc, how it came about as an element, separate or combined, its distribution, the methods of mining, primitive and modern, and of manufacture, for the most widely varied purposes of peace and war, its chemistry proper, its "junior partners," its especial service in the science of electricity, pure and applied, its uses in the home and afield, its applications in art proper as well as "the arts" as usually understood—all are handled in a literary style that makes each reader feel as though the book were written for him alone.

"The Earth's Heritage of Copper" is given a diagram that more clearly than any table shows the astounding growth of the world's copper production since 1810; and on page 63 is a table which should make good reading for Chileans, who are in half mourning for the decline of the guano and soda saltpeter exports. It shows that that country has about 40 per cent of all

the copper in the world; the United States having about 33 per cent. (When it comes to capital ownership, the United States controls nearly 75 per cent of the world's total copper reserve; the British about 20.)

The reading references are valuable. Altogether the work almost compels interest from cover to cover, giving valuable and reliable information in a masterly, non-technical manner. G.

Gewinde, DIN-book No. 2. By Prof. G. Schlesinger of Charlottenburg Institute of Technology. Published by Normenaueschues der Deutschen Industrie, Ingenieurhaus, Berlin N W 7, Germany. Price, bound in cloth, 4.25 marks.

This book on German screw thread standards is a second edition and contains additional material made necessary because of the developments in screw thread standardization work since the book was first published in 1923. This applies particularly to the sections dealing with the designation of screw threads on drawings; special threads as developed by trade sectional committees; and screw thread tolerances.

The scope of the book may be judged from the following sectional headings: Principles; historical developments; fastening threads; fine threads and special threads. Sections are also devoted to trade standards for threads; abbreviated designations for threads; representation of threads on drawings; non-standard threads; screw thread tolerances, and screw stock tolerances; and foreign thread standards. The book is thoroughly indexed.

Wheeling Book Pictures Steps in Iron and Steel Making

"From Mine to Market" is the appropriate title of a publication put in circulation by the Wheeling Steel Corporation, Wheeling, W. Va. Certainly no stage of the operation from the ore and coal to the finished steel products fails of description either in text or picture in this 115-page book, and the company and the authors are to be complimented for an exhaustive work, which is sure to interest those directly as well as indirectly connected with the steel and allied industry.

The book starts with a history of the Wheeling Steel Corporation, which found its inception, not merely with the merging of the Whitaker-Glessner Co., the Wheeling Steel & Iron Co. and La Belle Iron Works, on July 1, 1920, but way back in 1715 with the founding of the Principio Co., Principio, Md., which built an iron furnace at that point. Control of that company passed in 1829 to interests which in 1852 erected a rolling mill in Wheeling, known as the Crescent Iron Works, which later became the Whitaker Iron Co., and still later the Whitaker-Glessner Co., with the acquisition of the Laughlin Nail Co., Wheeling, and the Burgess Steel & Iron Works, Portsmouth, Ohio, started in 1871.

The origin of what eventually became the Wheeling Steel & Iron Co., was in 1832 in the building of the "Old Top Mill" operated by the Missouri Iron Works, which later became the Wheeling Iron & Nail Works. What became La Belle Iron Works, another principal branch of the Wheeling Steel Corporation, had its foundation in Bailey, Woodward & Co., which started business in 1852 with a plant that consisted of a puddling furnace, a nail plate or skelp mill and a cut nail factory. It has long been recognized that the Wheeling district was one of the early iron and steel producing centers of the country, but perusal of the history of the component units of the Wheeling Steel Corporation in this book will cause many to revise their ideas of the real inception of the company.

Printed on glazed paper, the illustrations are more comprehensive than usually are to be found in publications of the sort.

"Natural Bonded Molding Sand Resources of Illinois" is the title of Bulletin No. 50 of the State Geological Survey of Illinois. The author is M. S. Littlefield. It contains 183 pages and is well illustrated.

New Books Received

Iron in Antiquity. By J. Newton Friend. Pages 221, 5½ x 8¼ in., illustrated. Published by Charles Griffin & Co., Ltd., London. J. B. Lippincott Co., Philadelphia, publishers in America. Price, $5.

English and American Tool Builders. By Joseph Wickham Roe. Pages 315, 6½ x 9½ in., illustrated. Published by McGraw-Hill Book Co., Inc., 370 Seventh Avenue, New York. Price, $4.

Transactions of the American Foundrymen's Association. Vol. 33, pages 921, 6 x 9¼ in., illustrated. Published by the American Foundrymen's Association, 140 South Dearborn Street, Chicago.

Medical Care of Industrial Workers. Pages 112, 6 x 9¼ in. Published by the National Industrial Conference Board, Inc., 247 Park Avenue, New York, Price, $2.

Bituminous Coal Fields of Pennsylvania. Part II. By James D. Sisler. Pages 511, 6 x 9 in., illustrated. Published by the Department of Forests and Waters, Harrisburg, Pa.

Weights and Measures in the United States. Pages 30, 6¼ x 9¼ in. Published by the National Industrial Conference Board, Inc., 247 Park Avenue, New York. Price, 75c.

The Ratio Chart in Business. By Percy A. Bivins. Pages 177, 5½ x 8¼ in., illustrated. Published by the Codex Book Co., Inc., 461 Eighth Avenue, New York. Price, $3.

Der Behälterbau. By Ernst Broschat. Pages 96, 6¼ x 9¼ in., illustrated. Published by Otto Spamer, Leipzig, C 1, Germany. Price, 7.50 gold marks.

Metallography and Heat Treatment of Iron and Steel. Third Edition. By Albert Sauveur. Pages 535, 7½ x 11 in., illustrated. Published by the University Press, Cambridge, Mass.

Weights and Measures in the United States. Special Report No. 34. Pages 30, 6¼ x 9¼ in. Published by the National Industrial Conference Board, Inc., 247 Park Avenue, New York. Price, $0.75.

American Chambers of Commerce Abroad

How the American Chamber of Commerce abroad helps the American foreign trader was the subject of an address by Edward F. Feeley, American commercial attaché, Buenos Aires, before the fourteenth annual meeting of the Chamber of Commerce of the United States. It is reprinted in a recent bulletin of that body. Another bulletin contains addresses by Dr. Julius Klein, director of the Bureau of Foreign and Domestic Commerce, Department of Commerce, and William C. Redfield, former Secretary of Commerce of the United States, upon the dependence of America upon foreign-controlled raw materials. The headquarters of the chamber are at Washington, D. C.

Calendar of Economics

In a 1926 calendar issued by the Committee on Public Relations of the Eastern Railroads, New York, the dates are shown in different colors in proportion as the gross revenues are required to pay certain bills. Thus, the entire revenues for the first five months, plus six days in June, are labeled wages—a total of 157 days; 27 days ending July 3 pay for locomotive fuel; 70 days ending Sept. 11 pay for materials and supplies; 24 days ending Oct. 5 pay other operating expenses; 21 days ending Oct. 26 pay taxes; 41 days ending Dec. 6 pay fixed charges, interest and rents; 19 days ending Dec. 25 pay dividends, while only six days are left to make up losses of former years, to help create reserves against future bad years and to make improvements out of earnings.

Business Analysis and Forecast

BY DR. LEWIS H. HANEY

DIRECTOR, NEW YORK UNIVERSITY BUREAU OF BUSINESS RESEARCH

Current Statistical Data, Considered Independently of Trade Opinion, Indicate That:

THE rate of steel production is likely to trend downward.

Finished steel markets seem to be in a position where they will do well if they hold prices stable.

Steel ingot production is about 15 per cent above present estimated normal requirements.

Pig iron production is approximately 17 per cent above estimated normal requirements.

Lower prices for pig iron seem in prospect so long as production continues to be excessive.

REPORTS for June show a continuation of the same general situation in the steel industry that has existed throughout the year. That is to say, June was characterized by (1) a large and well sustained production of steel ingots, (2) a small and declining volume of unfilled orders, and (3) prices of finished steel stable at a low level.

Production in Ingot Tonnage in June Less Than Seasonal

STEEL ingot output at 3,751,000 tons was nearly 200,000 tons lower than in May, but shows a large gain over a year ago, when the output was 3,204,000 tons. The June output of steel ingots over a period of years has averaged about 6 per cent under May and, as the decrease this time was less than this average, our adjusted index showed a net gain, being 115.2, against 113.3 in May. This means that ingot production was about 15 per cent above the estimated normal trend, making due allowance for the merely seasonal variations. The June index compares with 119 per cent of normal in both January and December of 1925, and 131 per cent in May, 1923.

While June production, therefore, was large, it was in no real sense record-breaking, for it is found to be much lower than several of the peak months in recent years, when due allowance is made for the normal growth of the industry and for seasonal ups and downs.

Unfilled orders of the Steel Corporation, at 3,479,000 tons, showed a decrease of 170,000 tons. Usually there is a slight increase in the unfilled orders during June, and this tends to emphasize the decrease this year. The adjusted index is 66.8 per cent of the 1921 average, against 70.6 per cent in May and 71.3 per cent a year ago. *The June unfilled orders made the poorest showing since September,* 1924.

THE IRON AGE average price of finished steel was 2.42c. in June, which compares with 2.416c. in May. With the exception of May, it was the lowest monthly average since October last year.

This analysis of the statistical data leads to the conclusion that no general price advance in steel is indicated. It is fairly obvious that steel prices are low, but the statistical position of the industry clearly shows that steel will do well to hold stable in price. In fact, it is maintained at present levels only because, in the first place, current demand for a number of finished steel items has been large, and, in the second place, current prices are near the cost of production. The current rate of production of steel ingots is abnormally great and it hardly seems possible that it can be long maintained, especially in view of the fact (discussed in last week's issue) that the trend of activity in the chief steel consuming industries is downward.

Decrease in Pig Iron Output Coincided with Decline in Price

BOTH production and the price of pig iron declined in June, which is as forecast in this department.

Pig iron output was in round numbers 3,235,000 tons, which compares with 3,481,000 tons in May and 2,673,000 tons a year ago. The June figures are the lowest since November last year. Usually there is a decrease of only a little over 3 per cent in the June pig iron output; thus the actual decrease last month was slightly more than seasonal. Our adjusted index registered 117.3 per cent of normal, against 121.8 per cent in the preceding month. This means that production of pig iron in June was about 17 per cent over the estimated normal, making due allowance for the normal growth of the country's requirements, and for the usual seasonal changes.

THE IRON AGE composite price of pig iron averaged $19.82 in June, against $20.27 in May, thus falling to the lowest point reached since September last year.

No sustained strength in the pig iron market is

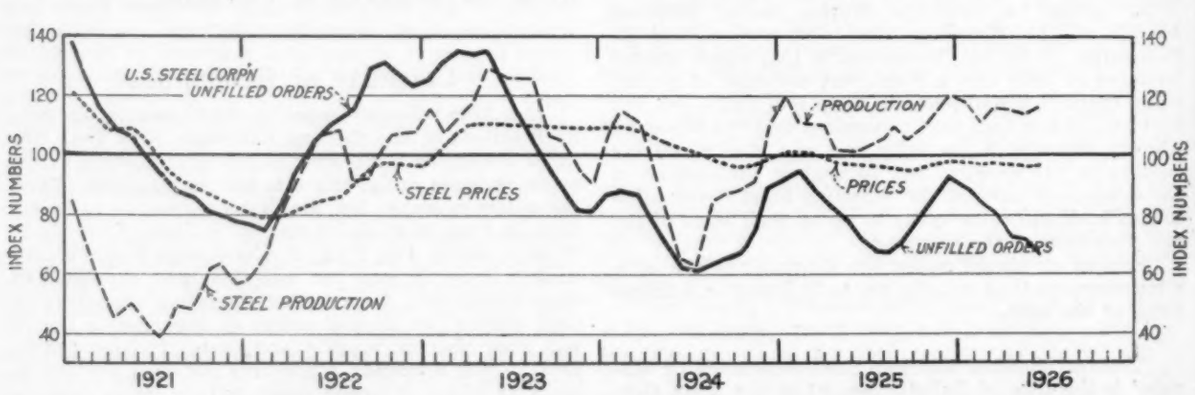

Fig. 1—In Conformity With the Usual Seasonal Decrease in Steel Ingot Production, June Output Showed a Moderate Downward Movement, But as It Was Less Than Normal, the Index Moved Slightly Upward

In This Issue

Believes foreign competition for American steel business will increase.—Low wages, particularly in France and Belgium, coupled with low ocean freight rates, will enable foreign mills to make broader inroads into our Coast markets, despite tariff.—Page 220.

Excess manufacturing capacity over requirements is probably less now than five years ago.—And the excess is not so large as is generally assumed, for the tendency to over-rate maximum productive capacity is widespread.—Page 236.

What are the prospects for steel prices?—"Finished steel markets seem to be in a position where they will do well if they hold prices stable," says Dr. Haney.—Page 228.

Neatness in plants is next not only to godliness but to efficiency as well.—Disorder is not conducive to improved production records. To encourage neatness one big manufacturer has a committee make a weekly inspection of entire works. The neatest department is so indicated with a portable sign; the dirtiest department is also designated.—Page 237.

Beware of unscrupulous scrap dealers.—Roll scale, furnace cinder, chemical sludge and other materials with no iron-making value are cleverly compounded with good scrap and passed off on iron and steel makers, ruining not only equipment but heats as well. Scrap Dealers' Association pleads for selling to none but reputable dealers.—Page 232.

American shipping is not supported by American exporters.—While tonnage carried from American ports in foreign ships increased 3 per cent in 10-month period over last year, American ships lost 11 per cent.—Page 222.

Noted statistician cites the answer to the farm problem.—" . . . ultimately the demand (expanded by population growth) for food will make the farming profession a profitable one, although many years may pass before the condition so changes as to stop the migration from farm to city," says Dublin of Metropolitan Life.—Page 226.

Does complete analysis of blast furnace slags pay?—A more uniform iron and a higher output are the reward to those who take the time and trouble to utilize the wealth of information on blast furnace operation that complete slag analysis discloses.—Page 209.

As to pig iron prices.—" . . . no sustained strength is warranted by the existing statistical situation."—Dr. Haney.—Page 228.

Eighty men produced the same steel tonnage in 1925 *that required* 100 *men in* 1914-16 *period.*—Comparison by Government official shows strikingly the results of greater use of labor-saving equipment, aided by skillful management and increased labor efficiency.—Page 211.

Bottom-cast ingot molds last twice as long as top-cast.—In making rimmed steel the bottom-cast molds are good for 150 to 200 heats, and top-cast from 75 to 100. In bottom-casting the center runner should be a third taller than the height of the ingots, to give sufficient head to prevent gas from blowing back up the runner.—Page 215.

Jobbing foundries will lose money on small orders unless adequate charge is made to cover "handling expense."—Make a minimum fixed charge to cover "overhead" (pattern handling, billing, scheduling, etc.) on the small orders. This frequently overlooked item is usually as big on the little jobs as on the large ones, and will eat up the profit unless it is provided for.—Page 213.

In making rimmed steel, aluminum should not be added until the mold is at least one-third to half full.—This allows maximum agitation of the metal so as to sweep off the forming skin holes on the sides as far down as possible.—Page 214.

Is German steel sold here 18 *per cent under domestic price in Germany?*—This is reported on one importation, and the anti-dumping act may be invoked.—Page 222.

Post-war iron and steel exports below pre-war totals.—Aggregate for 1921-25 period below 1911-15 period. But tin plate and hoops and bands show marked gains.—Page 220.

Employment in the metal trades declines.—National Metal Trades Association figures reveal that the total of 612,108 employees in June was 4 per cent below May, which in turn was 3 per cent below April.—Page 234.

Our accident prevention record is not so favorable as it might be.—Too much attention to safety education and not enough thought to safeguarding new equipment, is one cause, says National Safety Council head.—Page 235.

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Localization of Markets

IN the market report sections of each issue of THE IRON AGE there appear reviews of trade conditions in the different geographical divisions of the country, as well as in various steel-producing countries of Europe. This geographical division of market reports has been a feature of THE IRON AGE practically from its inception, and developments in the industry within the last few years have tended to recommend this practice, if that were necessary, as being strongly in the interest of the reader.

The breaking away from Pittsburgh basing in the case of selling steel, together with restricted distribution of pig iron, as affected in part by high freight rates, makes each district more of a separate entity than ever before. The market summary serves to tie all together, with its analyses of diverging as well as parallel influences.

For News Summary See Reverse Side

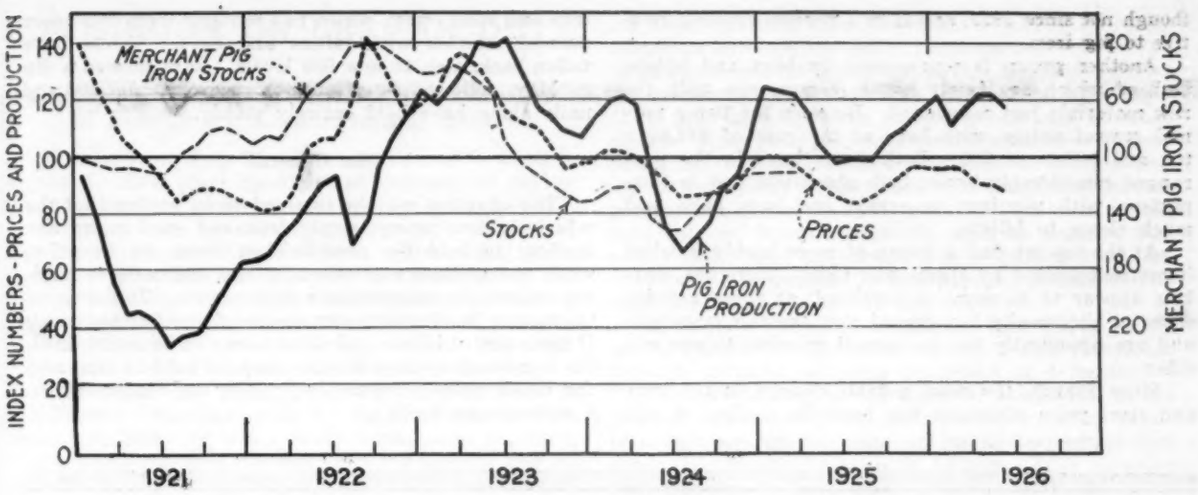

Fig. 2—Though the Continuing High Rate of Steel Production and Consumption Somewhat Justifies the High Output of Pig Iron, a Decline in the Trend of Production Seems Inevitable

warranted by the existing statistical situation. It is true that some curtailment of output occurred in June and that the furnaces in activity numbered less than 60 per cent of the total. Also, the uptrend in the ratio of average daily pig iron production to the average daily steel ingot production has been checked and our indexes of steel and iron output are nearly in line—being 115 and 117 per cent of normal, respectively.

But pig iron output is still excessive, both in comparison with normal requirements and with the rate of steel-producing activity. Stocks of merchant pig iron are believed to be accumulating. We do not pretend to say what control and stabilization policies may do toward supporting the market, but a little lower level of pig iron prices would be indicated for a perfectly free competitive market.

Three Groups of Products Considerably Out of Line with Each Other

IT continues true that the important items of finished steel are fairly low in price, particularly when compared with such raw materials as coke and steel scrap. This is notably true of sheets. Black sheets in June averaged $69.44 per ton, against $71.23 in May. The June figure is the lowest since March, 1922. Though wire nails are not so extremely low, the same may be said of them as representing wire products in general. The June average here was $59.36 a ton which, except for the dip last October, is the lowest since September, 1922.

Billets and bars are only a little below normal in comparison with the raw materials, and are far from being as low in relation to scrap or coke as has been the case at times in the past few years. If, however, we take billets as the base of comparison, we find that sheets are near bottom levels, nails are only a little low and not abnormally so, and bars are about normal. On the other hand, in comparison with billets, pig iron, steel scrap and coke are all high.

Thus we find three groups of products which are out of line with one another, but two of which show normal relations existing within the group. Coke, scrap and pig iron form one group. The average prices for these three items in June were, respectively, $2.83, $15.75, and $19.82. These figures show a normal spread and, considered alone, appear to be rather low. Coke is obviously near the bottom, at practically the low point reached on the average for any month in 1921. Pig iron is not far above the 1921 bottom. Scrap has sold considerably lower at times in recent years,

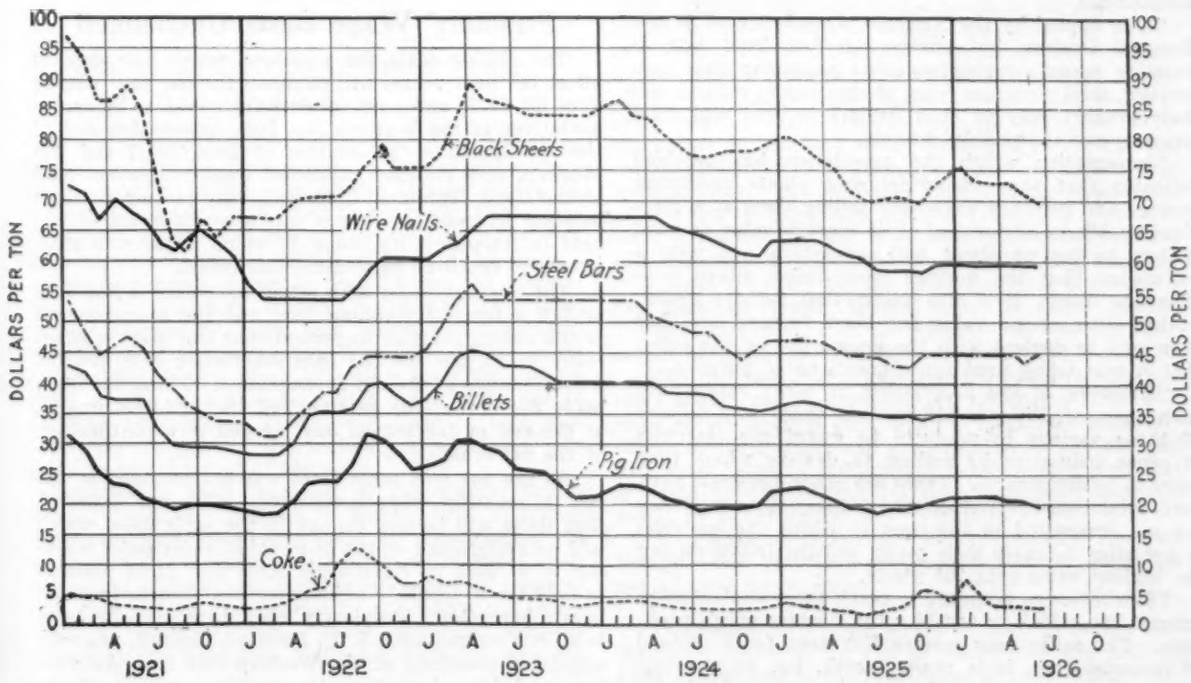

Fig. 3—The General Trend of Commodity Prices, Which Has Continued Downward Since December, Has Now Turned Slightly Upward. Steel prices are much nearer bed-rock than when sharp breaks occur. Their margin over raw materials is unsatisfactory

though not since 1921, and is in a normal position relative to pig iron.

Another group is represented by bars and billets, both of which are fairly low in comparison with the raw materials just mentioned. Between the two a normal spread exists, with bars at the rate of $44.80 a ton and billets at $35. Both items have in the past ranged considerably lower, both absolutely and in comparison with pig iron or scrap, and bars have sold much closer to billets.

At the top we find a group of more highly finished items represented by sheets and nails. Here the markets appear to be more demoralized, as these articles show an abnormally low spread over the raw materials and are apparently not in normal relation to one another.

Since March, the most notable change in the iron and steel price structure has been the decline in pig iron and steel scrap, which has brought them into more normal relation with billets and bars. Sheets have fallen back, also, to new low levels. Bars showed a dip in May, followed by a prompt recovery. Billets and nails alone have held entirely steady.

In General

The situation may be summed up by saying that the relatively low prices of pig iron and steel scrap are tending to hold the semi-finished items up in price, while the weakness of sheets, plates and wire is tending to put the intermediate items down. The crux of the matter lies in the maintenance of sem-finished steel. If the price of billets and sheet bars can be maintained, the non-integrated producers may be held in line and the whole price structure ultimately be readjusted on a satisfactory basis.

The schedule of the next installments of the ***Business Analysis and Forecast,*** *by Dr. Lewis H. Haney, Director, New York University Bureau of Business Research, is as follows:* ***July 29****—General Business Outlook;* ***Aug. 12****—Activity in Steel Consuming Industries;* ***Aug. 19****—Position of Iron and Steel Producers.*

SHARP PRACTICE IN SCRAP

Waste Material Dealers Ask Cooperation for Its Prevention

One activity of the National Association of Waste Material Dealers in the interest of higher standards in the old material trade, is the subject of the following communication from the association's executive office:

" 'California borings' is a term used by the scrap iron trade to describe a combination of roll scale, furnace cinder, chemical sludge and other by-products having little or no value from an iron standpoint, which unscrupulous dealers mix with cast iron borings and steel turnings and ship to blast furnaces. Although consumers of blast furnace material are ever alert and are familiar with the practice, many doctored cars get through, so cleverly is the material compounded.

"This appeal by the National Association of Waste Material Dealers, by courtesy of THE IRON AGE, is made to manufacturing concerns producing cast iron borings, steel turnings, slag, sludge, scale, etc., to sell their product only to such dealers in iron and steel scrap as are thoroughly reliable.

"Information which the association has received indicates that some manufacturing plants producing borings and turnings have been selling them at a price considerably in advance of their market value to yard dealers having no direct mill connection, and with a knowledge that the borings were being mixed with off-grade stock. It is also known that furnace cinder, having little or no value for blast furnace use, has been sold to dealers with the knowledge by the seller that it was being used for a questionable purpose.

"Members of the association in many cases have been successful in prevailing upon those who dispose of these various by-products to guard the interests of other industries by selling to dealers whom they know to be dependable. There are other concerns, however, producing by-product, who frankly state that they are not interested in the uses to which the material is put after it leaves their plant, and the fellow paying the highest price gets the goods.

"This message is meant to reach the manufacturing concern too selfish to consider the furnace man's problems. The seller may receive $50 more for a carload of material than it is really worth, but as a result the consumer may ruin a heat or do damage to equipment running into thousands.

"We ask producers who are parties to these objectionable practices: 'What would be your attitude if conditions were reversed?' "

The National Association of Waste Material Dealers, with headquarters in the Times Building, New York, was formed in 1913 to foster the interests of those engaged in the waste material and allied businesses, to reform abuses, to secure freedom from unjust or unlawful exactions, to diffuse accurate and reliable information on the standing of merchants and on other matters, to procure uniformity and certainty in customs and usages of trade, to settle differences between members and non-members, and to promote a more enlarged and friendly intercourse between business men. It is international in scope, having a membership of over 500 firms in the United States, Canada and Europe.

It is not operated for profit. The association maintains a traffic department, credit bureau and an arbitration court.

Puddlers' Wage Basis Unchanged

The sliding scale for puddlers, which has been in effect the past years, will continue for the year ending June 30, 1927, under an agreement arrived at by representatives of the Western Bar Iron Association and of the Amalgamated Association of Iron, Steel and Tin Workers at a two-day adjourned wage conference held at the Hotel Cleveland, Cleveland, July 14 and 15. This meeting on puddlers' wages was a continuation of one held in Atlantic City, June 7, which adjourned after efforts to reach an agreement had failed.

The Amalgamated association asked for a flat rate of $15 a ton for puddling iron and the abandonment of the sliding scale arrangement that had been in effect many years, but the bar iron association held out for a continuance of the old arrangement. Plans had been made for a four-day session, but the puddlers finally, at the end of the second day, agreed to a continuance of the old scale.

As the bar iron scale price was not changed at the last bi-monthly wage settlement, it is not expected that there will be any change in the scale base, which will be ascertained at the bi-monthly adjustment meeting to be held in Pittsburgh, Aug. 26. It is planned to hold the bi-monthly adjustment conferences in Pittsburgh hereafter. Previously they have usually been held in Youngstown. S. C. Leonard, Detroit, recently appointed secretary of the Western Bar Iron Association, and for a long time its president, will meet the officials of the Amalgamated association at the bi-monthly conferences in Pittsburgh.

COMMISSION ON GERMAN DUTY

Progress in Selecting Investigators of Question of Bounty and Countervailing Order

WASHINGTON, July 20.—Investigation as to whether or not the Raw Steel Syndicate of Germany is paying bounties on raw, semi-finished and finished steel will be taken up soon by a joint commission consisting of two Americans and two Germans, representing their respective governments. The German government last week notified the State Department that it had selected its representatives, one from the Ministry of Economics and the other from the Foreign Office. The State Department in turn advised the Treasury Department and the latter has just prepared a suggestion as to the Treasury representative for the American Government. A Treasury and a State Department representative will be selected, the one from the London and the other from the Berlin offices of the United States Government. The United States is giving the commission a diplomatic color, inasmuch as the German government, which has done likewise, made the order of the Treasury applying countervailing duties on imports of iron and steel products from Germany a matter of correspondence through the State Department.

It apparently is the belief of this Government that the investigation can be made with comparative expedition and that its result therefore soon will be made known. Meanwhile the order stands suspended. Liquidation on German iron and steel imports are proceeding as usual, and in the event it is found the German government is correct in its position that bounties are paid only on finished products, such as engines, etc., rather than raw, semi-finished and finished steel, the order would be revoked. Otherwise the countervailing rates would be named and applied.

It seems a foregone conclusion that pig iron will not be affected by the order because it had been listed through an error as being the object of a bounty.

Whether or not, in the event of revocation of the present suspended order, countervailing duties would be sought against the remanufactured lines where they enter this country remains to be seen. It is conceded that imports of these lines from Germany are small. There also is a question as to whether the countervailing rates could be made to reach back through these remanufactured products to the iron and steel represented in them.

SHEET PRODUCTION AND SALES

Independent Makers Accumulate Business in June with Slight Drop in Production

PITTSBURGH, July 20.—Independent sheet steel makers accumulated business in June. The monthly report of the National Association of Sheet and Tin Plate Manufacturers discloses sales for the month of 284,319 net tons compared with 201,743 tons in May, an increase of 82,500 tons.

Production amounted to 268,448 tons, an increase of only 3907 tons over May, while June shipments of 262,231 tons were 5068 tons under those for May. Unfilled orders as of June 30 were 422,237 tons, or 3655 tons more than on May 31.

The total capacity of the 710 sheet and jobbing mills in the country in June was 432,650 tons and the percentage of the capacity reporting was 73.8. Sales were equal to 89 per cent of capacity, production 84 per cent, shipments 82.1 per cent and unfilled orders 132.2 per cent.

Malleable Castings "Trust" Case to Go On

WASHINGTON, June 20.—Following the settlement of points of law the Department of Justice will resume the prosecution of the case of the United States vs. the National Malleable & Steel Castings Co. and others for alleged violation of the anti-trust laws. The case has been set for trial in Cleveland on Sept. 13, next.

The most recent action in the case was the appearance of the Standard Wheel Co., Stanley G. Flagg, Inc., the Marion Malleable Iron Works and the executive officers of the latter two companies in the court at Cleveland, where pleas of guilty were entered on behalf of the corporations, which were sentenced to pay fines aggregating $8,500, and pleas of *nolo contendere* on the part of the individuals, who were sentenced to pay fines of $3,000 each.

Indictments were returned in the United States District Court in Cleveland in March, 1924, charging 46 corporations, which are said to manufacture 75 per cent of the malleable iron produced in the United States, and 47 individuals connected with the corporations with having participated in a combination in restraint of interstate trade. These companies were organized as the American Malleable Castings Association.

Delay in the trial of the case has been caused by the resistance on the part of 35 of the defendants residing outside of the Cleveland district to their removal to Cleveland for trial. After many court actions the case finally reached the United States Supreme Court, by whose decision the Government won except in the case of three defendants who are still outside of the trial court. Further resistance to removal was terminated in May of this year by the decision of the United States Supreme Court in an appeal of one of the defendants from the District Court of the Southern District of Iowa. This decision put at rest several important questions of law respecting the removal for trial of a defendant in a criminal case from one judicial district to another and cleared the way for a resumption of the trial in Cleveland by the Department of Justice.

Extension of J. & L. Scale from Chicago to Michigan Points Recommended

WASHINGTON, July 20.—Suggesting the application of the Jones & Laughlin scale plus an arbitrary, Examiner C. H. Peck, in a proposed report to the Interstate Commerce Commission last week, held that fifth class rates on iron and steel articles in carloads from points in the Chicago switching district to St. Joseph and Benton Harbor, Mich., are unreasonable. The tentative decision grew out of a complaint made on behalf of the Specialties Mfg. Co., St. Joseph, that the fifth class rates of 20.5c. prior to Sept. 10, 1925, and 19.5c. thereafter on iron and steel products from the Chicago switching district to St. Joseph and Benton Harbor were unreasonable. The examiner said that the commission should find that the rate assailed (19.5c.) is unreasonable to the extent that it exceeds that prescribed for like distances in the Jones & Laughlin case plus the fifth class arbitrary for the same distances approved in the Michigan Traffic League case. It would appear, the examiner said, that the specific rate on this basis would be 15.5c. per 100 lb.

The railroads had urged that the Jones & Laughlin scale should not be extended into Michigan from Chicago on the ground that it would prejudice manufacturers at Pittsburgh who are required to pay the full fifth class rates to destinations in Michigan; also that it would disrupt the uniform basis now maintained and result in heavy reductions in revenue.

"Complainant is entitled to a reasonable rate, although other readjustments may follow its establishment," said the examiner.

Production of electric power in May by public utility power plants in the United States was 5806 millions kwhr., according to the Geological Survey. This compares with 5774 in April and 6149 in March. Average daily output was the lowest of the year, but was ahead of that of any month prior to last October.

Negotiating for Merger of Alloy Steel Companies

Negotiations for the merger of the United Alloy Steel Corporation, Canton, Ohio, and the Central Steel Co., Massillon, Ohio, are again under way according to information that has come from banking sources and which is given credence by the trade. Late last year the consolidation of the two companies came close to a consummation point, but was not carried out because of a reported slight difference in exchange value to be placed on stock. Reports from the inside sources also indicated that there was some disagreement over the personnel of the proposed new organization. Since those negotiations fell through, E. A. Langenbach, former chairman of the United Alloy Steel Corporation, sold his large holdings to C. S. Eaton, investment banker and associates, and interests affiliated with Pickands, Mather & Co., Cleveland, have become more active in the United Alloy company.

Merger talk is not centered entirely around the United Alloy and Central companies, as many believe that the time is not far distant when the McKinney Steel Co. and the Otis Steel Co., Cleveland, and the Trumbull Steel Co., Warren, Ohio, will be brought together either as a separate corporation or in a five-plant merger that will include the Canton and Massillon companies.

Acquires Cincinnati Warehouse

Negotiations for the sale of the Cincinnati warehouse of the Bourne-Fuller Co., Cleveland, to the Jones & Laughlin Steel Corporation, Pittsburgh, were concluded in Cleveland, July 20, at a meeting of officials of both companies. The property will be taken over at once by Jones & Laughlin Steel Corporation and operated as an addition to its present warehouse system, making the fourth large distributing depot now owned and operated by this interest. The other warehouses are in Pittsburgh, Memphis and Chicago. The acquisition of the warehouse at Cincinnati gives the company three depots accessible by river transportation as well as by rail, and will be developed as a distributing point for its steel products shipped down the Ohio from Pittsburgh in steel barges. The first established movement of steel in barges was begun by Jones & Laughlin in 1921.

It is announced that the sale by the Bourne-Fuller Co. of its property in Cincinnati does not mean that it withdraws from the steel warehousing field.

Markets Aluminum Base Nail

The American Steel Co., Ellwood City, Pa., is putting on the market an aluminum base nail, the metal being known as Alual. It is offered as a substitute for copper nails, and because of its rust resistant properties, it is claimed to be superior to galvanized nails for roofing, slating, and tie dating. The company has also been producing nails of Monel metal and has made experiments of stainless iron nails.

Track Work Production Holding Up

Shipments of trackwork for T-rail track of 60 lb. per yd. and heavier are covered in a report of the American Iron and Steel Institute, New York. This shows June shipments at 16,085 net tons, compared with 16,058 tons in May and with 17,216 tons in June, 1925. Both the June and May reports of this year, as well as that for April, lack the figures for one producing company.

With this omission, shipments for the second quarter of 1926 showed 48,633 tons, compared with 50,861 tons in the first quarter of the year and with 50,983 tons in the second quarter last year. For the first half the total this year was 5 per cent above that of last year, with 99,494 tons against 94,336 tons.

Last year showed a considerable slump in the second half, the total having been 76,228 tons, or nearly 20 per cent below the first half. The total for the year was 170,564 tons, compared with 152,576 tons for 1924 and with 210,762 tons for 1923.

Western Decision Does Not Bar Advance in Iron and Steel Rates

The application made by Western railroads for a 5 per cent increase in freight rates was denied in an opinion handed down July 15 by the Interstate Commerce Commission. In its decision the commission concluded that no financial emergency exists in the Western district such as would demand an increase in rates and that the earnings of Western carriers as a whole have not been such as to warrant any general revision of rates on products of agriculture or industries subject to depression.

WASHINGTON, July 20.—Whether or not railroad rates on iron and steel products will be increased in the Western district will depend, it is stated, upon supplemental information the carriers in that section are expected to submit to the Interstate Commerce Commission following its decision last week denying their application for a blanket freight rate advance of 5 per cent. The commission left the way open for the railroads to present additional information as to specific products, excepting agricultural, "where particular charges need adjustment to remove inconsistencies, or where it could be shown that the products are not affected by depression." The commission also denied the petition of security holders of Northwestern railroads for an additional 15 per cent horizontal increase in rates in Western Trunk Line territory. It was the position of the commission that earnings of the carriers in the West as a whole did not justify the increases asked.

Crucible Steel Earnings High

Net earnings of the Crucible Steel Co. for the first half of 1926 were $3,113,682.12 as compared with $2,656,264.52 for the first half of 1925, and were higher than over any similar period during the last two years. Unfilled orders on hand June 30, 1926, totaled 126,140 tons as compared with 124,909 tons on the same date last year. Improvements on the company's Atha plant at Harrison, N. J., are practically finished, and the reconstruction and rebuilding of the Park Works at Pittsburgh and the new 18-12-in. bar mill at Midland, Pa., will be finished within three months.

Employment Declines in Metal Trades Shops

Employment showed a decline in June in over 900 shops affiliated with the National Metal Trades Association, located in New England, New York, Pennsylvania, Ohio, Indiana, Michigan, Wisconsin, Illinois, Iowa, and Missouri. A total of 612,108 employees was reported, as compared with 637,671 in May, 653,643 in April, and 656,731 in March. The June total, however, was much larger than that for the same month in 1925, which was 513,517.

Rail Exports from France

PARIS, FRANCE, July 8.—During the first five months of 1926 France exported 115,048 metric tons of steel rails. The average of 23,010 tons compares with an average of 20,067 tons for the 12 months of 1925. Principal destinations in the five months follow:

	Metric Tons		Metric Tons
Italy	15,542	Brazil	6,686
Germany	12,972	Morocco	5,929
Switzerland	11,152	Norway	3,548
Belgium*	9,946	Portugal	2,692
Great Britain	8,968	United States	2,375
Japan	6,888	Argentina	2,112

*Includes Luxemburg.

ACCIDENT PREVENTION

Director W. H. Cameron Discusses Experiences of National Safety Council

The interchange of accident experience by industrial plants was cited as the primary purpose of the National Safety Council by W. H. Cameron, its managing director, in an address July 15 before the Industrial Accident Prevention Conference of the United States Department of Labor at Washington. This is accomplished by compiling the accident statistics of the council's members and the solutions they have devised for perplexing accident problems.

Mr. Cameron explained that the council is a propagandist institution, aiming to teach the public how serious the accident situation really is and to encourage employers and workers to wake up to its importance by taking steps to organize definitely for the prevention of accidents.

Being a purely voluntary, cooperative association it has no means of compelling its members to keep accident records or to send them to headquarters. For this reason he emphasized the fact that success in the work of such a body must depend entirely upon the council's ability to impress upon its members the importance of their individual records.

How Accident Statistics Are Used

Mr. Cameron explained that the statistics gathered by the National Safety Council make it possible for a manufacturer to compare his accident records with those of other companies in the same field and thus raise the standard if possible. Eleven industrial groups are now contributing information to the council, while six others are reporting regularly to other agencies. The compilation of these statistics makes it possible to trace the national trend of accidents within certain industries, and leads to greater effort to ascertain the causes of increase or decrease.

As an example, the report of the automotive group for 1923 and 1924 showed an average increase of 22 per cent in frequency rate and an average increase of 167 per cent in severity rate. This report naturally stimulated the companies of the group to greater efforts for safety.

Another use for the records was noted by Mr. Cameron in their aid to the safety man in studying his own records more closely. They help him to select the most important accident causes and to apply the most necessary remedies. He may also use them to emphasize to the executives and workers of the plant the need for more safety effort.

Cites Typical Reasons for Accident Increase

Typical reasons for the increase of industrial accidents as pointed out by Mr. Cameron are "the speeding up of production, the necessity for cheaper production with less attention given to safety, increased labor turn-over and too much attention to safety education with not enough thought for the problem of safeguarding new equipment."

The great problem which the managing director sees confronting the council today is to convince industry, particularly the 92 per cent employing less than 100 workers, that recorded accident experience will reveal disgraceful economic and human losses.

New Company Consolidates Chromium Plating Operations

A new company, which will be known as the Chromium Corporation of America, has been organized to take over the patents of the chromium plating process developed by the Chemical Treatment Co. and the Chromium Products Corporation, the latter a subsidiary of the Metal & Thermit Corporation, 120 Broadway, New York. This new company will have plants and branch offices in most of the leading industrial centers.

John T. Pratt, president of the Chemical Treatment Co., will continue in that office and also be chairman of the board of the new corporation, of which Dr. F. H. Hirschland will be president. The latter is also president of the Metal & Thermit Corporation. The vice-presidents in charge of operations will be Louis C. Owens, Jr., Richard Loengard and Dr. Erich A. Beck. In announcing the formation of the new corporation, Mr. Pratt said:

> Manufacturers of metal products have followed with the greatest interest the rapid development of chromium plating during the past few years. Knowing the properties of chromium, particularly its extreme hardness and ability to resist acids, high temperatures and all sources of tarnish, corrosion or discoloration, they have felt that it would only be a matter of time before chromium plate would become a standard finish for many types of metal products.
>
> The two companies whose chromium plating interests are now being taken over by the new Chromium corporation have been the pioneers in the commercial development of this new art. In taking over the Fink and Grube patents, as well as others controlled by one or the other of the companies mentioned, the Chromium Corporation of America will own or control strong basic patents covering chromium plating under all conditions which are commercially feasible. It will also be allied with the rapidly developing German interests.
>
> The new corporation will also take over and operate the Chromium Products' plant in Jersey City and the Chemical Treatment Co.'s plants in New York and Waterbury, Conn. Plans are also being formulated for the opening of new plants at Carteret, N. J.; East Chicago, Ind., and South San Francisco, in each of which the Metal & Thermit Corporation now has plants, as well as in Chicago, Detroit, Cincinnati, Akron, Philadelphia, Pittsburgh and Cleveland. The company's expansion program contemplates a national service within two to three years. Having taken over from the Chemical Treatment Co. its trade-name "Crodon," which will hereafter stand for chrome plate as applied by the Chromium Corporation of America or its licensees, the new company will inaugurate immediately an intensified selling, merchandizing and engineering campaign which will cover manufacturers of certain types of metal products throughout the country.

Damage to Replogle Properties by Lake Denmark Explosion

Damage at the Mount Hope and Hibernia mines of the Replogle Steel Co., as a result of the explosions at the Lake Denmark Naval Depot in New Jersey, July 10 and 11, was found, following a brief survey, to have been confined almost entirely to the office building and 100 or more workmen's homes, owned by the company. The mines and the power machinery were unimpaired, and shipments of ore are continuing without interruption, according to officials of the company. Although a 14-in. shell passed through the power plant at Mount Hope, only the walls of the building were damaged. In the houses occupied by the employees, partitions were wrecked, windows, including the frames, were blown in and many roofs were caved in or weakened. Except for the station at Lake Denmark, the railroads were practically undamaged. An appraisal of the total damage to the Replogle properties is being made by the American Appraisal Co., 120 Broadway, New York.

Keith Car Company Acquires Standard Tank Car Co.

The Keith Car & Mfg. Co., Sagamore, Mass., has acquired a majority of the common stock of the Standard Tank Car Co., Sharon, Pa. The directors under the reorganization include W. J. McKee, vice-president Keith Car & Mfg. Co.; Ebon S. Keith, president Keith Car & Mfg. Co.; E. A. MacDonald, treasurer Standard Tank Car Co.; H. E. Coyl, vice-president Standard Transit Co. The officers are W. J. McKee, president; E. A. MacDonald, secretary and treasurer, and J. W. Keefe, auditor. The principal executive office will remain at Sharon. The Standard Tank Car Co. owns the capital stock of the Standard Transit Co.

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Our Manufacturing Capacity

AS the result of a questionnaire to which 2000 manufacturers replied, the National Association of Manufacturers reported that at the middle of this year they required 1,675,000 persons for maximum output and were then employing 1,408,000. From this it was deduced that manufacturers were at that time operating at 84 per cent of their capacity.

There are about 9,000,000 factory workers in the United States and an accounting of 1,408,000 of them is upward of 15 per cent. This amounts to a large sample, and evidently is a representative sample, inasmuch as this survey comprised a wide variety of typical industries. With the data no fault is to be found.

In respect to the conclusions drawn from it, however, a good deal of criticism may be offered. The National Association of Manufacturers apparently concludes that operation at 84 per cent of capacity indicates a high degree of manufacturing activity. That such a condition existed at the middle of this year, we agree, but the statistics presented do not in themselves show it.

What they really show is that our manufacturing capacity is still in excess of our requirements, though undoubtedly to a much less extent than was the position five years ago. Individual manufacturers have steadily been reluctant to admit this. Any one at present operating at 50 per cent, employing 1000 men, will say in answering a questionnaire that he would require 2000 men if running full. Yet there is no reasonable prospect that ever will he do so with his existing plant. This is not a preposterous illustration, but exemplifies the actual status in certain industries, though fortunately it is not general.

The over-rating of manufacturing capacity, however, is general. It is of the same order as the exaggeration of steel-producing capacity, giving a percentage of operations that is minimized, —a matter we have previously discussed.

American industry emerged from the war with a great excess of manufacturing capacity in many branches. In the course of time a part of it has been discarded and written off. Some of it has been scrapped. For some of it use, after improvement, has been found in supplying the needs of an increasing population. It is owing to this situation that there has been relatively slight requirement of savings for the provision of new manufacturing plant during the last five years, and that the people have been able to spend so freely for consumption goods as they have been doing, and still are.

The time will come, of course, when there will have to be a change of policy in this respect. Such a change will not be deliberate. Economic conditions, which will find their expression in markets, will compel it. This may not be many years distant. An increase in the employment of our manufacturing plant as a whole from 85 per cent to 95 per cent would probably proclaim the imminence of such a change. But even if we reached the latter figure, developments would be slow, for obsolescent plant would then be recalled into use. The experience would be similar to what happened during the war when the normal 5 per cent surplus of housing began to be contracted.

More Leniency in Discounts

EASIER discount terms have grown more common in selling steel. They are quite pronounced in relations with jobbers, as in the marketing of pipe. The practice illustrates what competition has done in the long period of short-range buying.

Time was when 2 per cent discount was allowed for payment in 10 days. This practice gave way quietly to settlements on the tenth of the month for shipments in the month preceding. Theoretically it was a giving of 10 days for verifying invoices. It resulted in the consignee's having goods an average of, say, 25 days before paying the bill. More recently demand has grown for shipping substantially the needs of a full month on the first of the month or within a day or two of it. The effect of this is to leave 40 days before liquidation is required. More than that, it forces the maker to load and hold cars ready for prompt release on the first. The situation has come to the pass, indeed,

that requests have been granted for shipment in one month, for billing in the following month and for taking payment in the third.

It is only fair to say that these extreme concessions are largely in the distribution of pipe. They result, as already intimated, from the effort of sellers to get desirable orders while the regime of very close connection between the mill and the consumer continues. Some mills sold pipe on consignment, so others agreed to liberality in payment arrangements. Preferred customers became numerous rather than exceptional. Large buyers have not been the only ones to receive generous treatment.

In all the talk about inadequate earnings, the new and elastic definition of "2 per cent off in 10 days" has come in for a deal of quiet discussion, but there is no one to say it will be eradicated until demand begins to outstrip supply. The recent heavy specifications allowed on expiring second-quarter contracts come nearer than anything the steel trade has seen in some time to the building up of backlogs in the order departments. But there will have to be a broader buying movement before preferred customers become a distinguishable class or before a firmer attitude is likely to be taken on discount privileges.

Good Housekeeping in Industry

NEATNESS, orderliness and general cleanliness in the industrial plant lead to high shop morale, low accident hazard and important economies in production. Where there is confusion, with dirty machinery, oil-puddled floors, corners littered with the debris of material and rubbish, carelessly piled stock, pitfalls for heedless feet, menace from falling objects and other evidences of slackness, men do not work at their highest efficiency nor do their efforts coordinate in money-saving ways.

Even a moderate degree of disorder is a definite handicap. Managements generally have learned to strive with insistent purpose to eliminate such conditions. It is not an easy task, year in and year out, for always a very considerable percentage of employees, and foremen as well, are lacking in the natural traits leading to what the National Safety Council calls good housekeeping. Rigidly enforced rules, with suitable penalties for infraction, and appeals to loyalty are helpful, of course. But competition between departments seems to have met with greatest success.

Rivalry has taken various forms. One great works has a weekly inspection of departments by a committee consisting of a workman, a foreman and a representative of the office. There are two 12-foot planks, made to be set on horses, one bearing the inscription, "This is the cleanest department in the plant," the other the curt rebuke, "This is the dirtiest department in the plant." At the close of the inspection these are set up in their appropriate places. Each Monday morning the employees find amusement in seeking out the sign of unenviable distinction. It often happens that the department which is dirtiest one week wins the neatness sign the next week, so well is the disfavor of owners and the ridicule of fellow employees driven home.

A large power company having a number of hydro- and steam-generating stations and various sub-stations has found it profitable, the management states, to distribute cash bonuses in the effort to attain a high degree of neatness and orderliness. The plants compete in two classes, generating and sub-station, and there are first and second awards. The winning crews share equally in the money, foreman and laborer faring alike. A winning station does not necessarily include every employee among those who share. Those who refuse or neglect to cooperate in the housekeeping are not considered in the award.

After several years of experience it was found that to continue the plan on the basis of first awards to the neatest stations was unfair. Certain stations were easy to keep in order while others were not, and their handicap was heavy. Therefore, the terms of the contest were changed so that the goal is "marked improvement in the appearance of buildings, apparatus and premises." That this should not work against continued effort at stations which had ranked high in orderliness, a system of credits was established, to be awarded for each contest period in which such a condition is maintained. Three such credits entitled the station to a bonus even more substantial than the usual first prize award. The results have been wholly satisfactory, while the money cost has been relatively small.

American War Gains

DECLINES in the franc and lira can be explained by economic and political reasons, but the most popular explanation abroad, and therefore the most important psychologically, is Uncle Sam's insistence upon collecting what Europe owes him. Auguste Gauvain, editor of *Journal des Debats*, after explaining that England is obliged to exact enough from her debtors to pay her obligations to America, exclaims: "To the United States, therefore, flows all the gold of Europe—in other words, the products of the labor of Europe's workers. Victors and vanquished have become tributaries to America, who is the only beneficiary of the war." The political controversy in France, that repeatedly destroys ministries and renders her government impotent, now focuses around the American debt.

It is a popular myth in Europe that will not be dispelled for generations that the United States was the beneficiary of the war. The fact, of course, is that this country suffered terribly from the war, but of the great countries of the world it suffered the least. The profits that we realized up to 1917 we sacrificed promptly and then squandered recklessly of our own resources for the benefit of our allies. That we were able to do so without feeling it so much as our European friends was owing to the nation's greatness and richness.

After the war we went to work without any socialistic nonsense, or anyhow without much of it, while all the countries of Europe, including Great Britain, let the poisons of socialism, communism, syndicalism and the "rights of labor" paralyze their efforts. Even now Great Britain is being bled white by its political policy of pauperization. And Mussolini is saving Italy by the use of a bludgeon. In all the post-war troubles of Europe, bad eco-

nomics and selfish politics have aggravated what was already a catastrophe.

The only reasonable complaint that Europe might have had against the American people would have been our demanding repayment of our loans dollar for dollar, which might have meant the return of two pounds of goods whereas we gave only one. If our Government had made an open agreement to reduce the face of the debts owed to us it would have run into political troubles with politicians representing many who do not understand economic principles, just as the French Government is finding uncomprehending oppositions. In effect, however, we have scaled down our foreign demands by making low rates of interest and prolonging time of payment, thus reducing present value; moderately in favor of the British, something like one-half in respect to the French, and much more for the Italians.

The present grievance of the French appears to be largely that we are not so lenient with them as with the Italians, also that we do not say in so many words that we will not press for payments in any interval of German default in payments to France. On that point, the fact that thus far we have waited on France while France has been waiting on Germany ought to be a fair guaranty of future reasonableness.

It is most unfortunate that the people of Europe are constrained to work hard for the payment of their debts instead of solely for their own upbuilding and enjoyment; but that is a consequence of the war for which the United States is certainly not to be blamed. At the same time the feeling has found expression in this country that in requiring the French to pay their debt to us, which must be done with goods, we should not have been setting up barriers and even proscriptions against what they produce. But it must be recognized that we cannot make a preferential tariff for France, neither for her benefit can we suspend the eighteenth amendment. Of some important products, as Mr. Eckel's article on other pages points out, her manufacturers are likely to send us a steady stream, and at prices which on their low costs should yield them more than a modicum of profit.

A METAL-WORKING plant in the Middle West employing 7000 men has concluded a year's safety contest between departments which, the management declares, was "a remarkable exhibition of sustained purpose, and proved a great benefit to the company and also, of course, to the workers, and their wives and children, who usually suffer indirectly the most from accidents," according to a service letter of the National Industrial Conference Board. The winning group was awarded a safety trophy. The goal was a minimum of accidents and the lowest frequency rate. Accident frequency was determined solely on the basis of the number of major accidents per million man-hours, the major accident being defined as any casualty which caused an employee to be absent from his accustomed work for more than the remainder of the day, turn or shift in which the injury was sustained. The total of man-hours worked in the plant was 16,000,000. Accident frequency was 17 per million hours.

Cost of Steel in Automobiles

LOOSE statements are sometimes made as to the relation between steel prices and the cost of producing automobiles. There is a disposition, for instance, to refer to a particular class of finished steel and compute what a small difference in the cost of building an automobile would be made by a change of $2 a ton in the price of that steel. The cost of putting automobiles on the market, however, is made up of a great many items and an item cannot be ignored because individually it is small.

When a commodity is marketed, the dollar the buyer saves comes from the seller, and vice versa, but that is not the whole story. The importance of the dollar, in furthering or restricting trade, may be quite different, greater to the one party in the transaction than to the other.

The relationship between turnover and capital investment is important. Precisely accurate figures cannot be computed from data available; but roughly speaking the sales of the steel mills in a good year are about one-half the investment. In the automobile trade the annual turnover is more than double the investment. Using figures presented by the National Automobile Chamber of Commerce, the wholesale value of motor vehicles and parts in 1925 was $4,210,174,963, while the capital invested (tangible assets) was $1,888,028,810. Dividing the former by the latter gives 2.23.

Thus the turnover relative to the investment is at least four times as great in the automobile trade as in the steel trade. In a sense, other things being equal, the opportunities for profit on investment are correspondingly larger.

Along another line, the large turnover relative to investment in the automobile industry shows that it is not so easy as some may suppose for an automobile or truck builder to cut profits in order to increase sales. Using this factor of 2.23, it would appear that a 10 per cent cut in the wholesale price would represent 22 per cent on the capital invested. Wall Street used to be much interested, at intervals, in predictions that there would be "no price war" in automobiles. Naturally enough! The makers could not afford to indulge in such a test. Price reductions must come chiefly through savings in producing and merchandising.

A wholesale value of $2,977,904,833 is assigned to the production of 4,336,754 automobiles and trucks in 1925, which makes an average value of $687. The average weight was probably under 2400 pounds, so that the average wholesale price was nearer 30 cents than 25 cents a pound. The average selling price of steel was probably well under 4 cents, and allowing for scrap and freight, the cost would be less than 5 cents. Taking steel, roughly, as constituting two-thirds of the weight, the cost is not far from one-tenth of the wholesale value of automobiles and trucks. This does not minimize the importance of steel prices, for all costs have their importance, but it furnishes a

better conception of the relationship than commonly prevails.

AFTER three and one-half years of a tariff on high-grade manganese ore, 98,324 gross tons was mined in the United States last year. While this is a considerable increase upon the 56,515 tons of 1924 and the 31,500 tons of 1923, it is no such output as was predicted by the advocates of the high tariff of 1922. It is only a fraction of the needs of the country's steel industry—equivalent to but 39,000 tons of ferromanganese, which is less than two months' output of American furnaces. It has been made fairly clear that what the country needs is the discovery of more manganese rather than the maintenance of manganese mining on a small scale by a tax on every ton of steel we produce. Such high-grade manganese ore as we have is much more nearly related, from the standpoint of public interest, to a program of national preparedness and conservation than to present-day industrial development.

Cast Iron for Enameling Purposes

Work undertaken by the United States Bureau of Standards attempts to determine any difference between Northern and Southern pig irons which may be the cause of blistering of enamels when applied to castings made of Northern iron. Castings have been enameled in the bureau's laboratory and in the plants of six manufacturers of enameled ware. The results were not concordant, with the many variables which entered into the process because of the various types of enamel and enameling procedure used.

Application of the enamel has been standardized by enameling all specimens in the bureau's laboratories with one single enamel. Since the high-temperature, wet-process enamel applied with a ground coat appeared to give the most severe test, and the desired indications as to whether cast iron would blister or not, this type of enamel is now being used. The batch compositions of the ground coat and white cover enamel may be found in Bureau of Standards Technologic Paper No. 246, pages 703 and 709.

Fluidity Most Important

A considerable number of specimen castings have been recently enameled. These represent 16 heats of iron, either melted in the bureau's experimental cupola or in an electric furnace, using two types of Northern iron as the basic irons. Some of the variables introduced in the heats were the type of furnace used, either cupola or electric, the number of times melted, especially in the electric furnace, and the additions of sulphur, either with the charge or at the ladle, and additions of manganese in the furnace. In two cases, also, scrap from previous melts was used.

Results of the enameling so far done with these irons indicate that the fluidity of the melt while being poured is probably one of the most important factors in insuring castings free from pinholes. These latter are striking causes of blistering.

For Measuring Internal Dimensions

J. M. Waterston, 427 Woodward Avenue, Detroit, has placed the Grove indicating gage on the market. It is designed to measure accurately internal dimensions from ¼ to 5 in. approximately. It is claimed that measurements may be taken quickly and with little previous knowledge of the tool.

S. A. E. Handbook

More than 600 pages of data relating to the automotive industries are contained in the March edition of this work, which is revised and reprinted semi-annually by the Society of Automotive Engineers, 29 West Thirty-ninth Street, New York. Some 500 standards and recommended practices approved by the society are covered in the publication, which has a comprehensive index. The work is divided into convenient sections and there are many illustrations and tables of data.

Automotive power plant, lighting, electrical equipment, parts and fittings, iron and steel, non-ferrous metals, non-metallic minerals, transmission, axles and wheels, tires and rims, frames, springs, controls, bodies, tests, etc., are included. In the section on iron and steel are given specifications, both of chemical compositions and of required tests, for materials for automotive purposes. This information is covered in great detail, with heat treatment diagrams and instructions for handling.

Bound in flexible leather covers, the book is being distributed at $5 per copy, with a special price of $2.50 for members.

Presents Trophy for Accident Reduction

The bronze statue here illustrated was presented to the Ashland, Ky., blooming and bar mill department of the American Rolling Mill Co., on July 10 as a result of its having made the best safety record of any of the company's eighteen groups for the year 1925. The accident severity rate of the American Rolling Mill Co. was reduced from 3.32 per cent in 1924 to 0.75 per cent in 1925 as the result of an intensive safety campaign. The trophy, the work of Clement J. Barnhorn, Cincinnati, represents a "composite" Armco worker, by which is meant "an interpretation of a number of photographs of mill employees combined into a representative figure."

The Bronze Safety Trophy by Clement J. Barnhorn, Cincinnati Sculptor, Won by the Ashland, Ky., Blooming and Bar Mill Department of the American Rolling Mill Co.

"A Bibliography on Research," consisting of selected articles from the technical press of 1923, 1924 and 1925, has been issued by the National Research Council, Division of Engineering and Industrial Research, 29 West Thirty-ninth Street, New York. This pamphlet will be distributed to industrial research laboratories, trade associations, technical colleges, universities and libraries. It is said to be the most complete survey yet published of current articles on research. The material has been drawn from reference cards on articles relative to industrial research. During the course of the study nearly 1500 references were accumulated. In general the arrangement and indexing follow the numerical reference numbers of the English Societies Library, based on the Dewey decimal system.

Iron and Steel Markets

Output Still at a Surprising Rate

Absence of Midsummer Slackening—Pipe and Tin Plate Movement Increases—Ingot Production Gains at Pittsburgh

THUS far July production and demand have not eased off to the extent looked for by leaders in the steel trade. In some products the movement is larger, notably in pipe and tin plate, and consumption by the automobile industry holds up well.

It is noteworthy that in the absence of railroad demand and with shipments of fabricated steel exceeding the inflow of new business, there is satisfaction throughout the industry over the scale of operations and the indications for the remainder of the quarter.

Some of the mills are now getting a larger volume of orders and specifications than in June. With a further gain in production at Youngstown, the rate of ingot output in the Pittsburgh and nearby districts is close to 80 per cent. For all Steel Corporation plants the percentage is 83, as against 85 a week ago.

At Chicago oil tankage programs and the large bar tonnages going to manufacturing consumers are making up in part for the lack of railroad orders. Current rail rollings are large, the Gary output for the week being 16,000 tons.

Budgets now being made by a half dozen Western roads indicate large fall purchases of rails and a substantial number of cars. The Lackawanna road has placed 20,000 tons of rails with Bethlehem and the Norfolk & Western has bought 17,000 kegs of spikes at Pittsburgh. Frog and switch makers have been actively in the market.

A Chicago steel company has ordered a large ore vessel and will ship 6000 tons of plates and shapes to the Lake Erie shipyard which has the contract.

Most tin plate mills are keeping up the exceptional rate at which they ran in the past half-year. Leading producers do not now promise shipment on new business before late September. The packing crops are all making large demands on can makers and some of the latter are increasing their original requisitions for July.

A bridge at Cincinnati on which bids are to be taken calls for 17,000 tons of steel. A manufacturing plant at Dayton, Ohio, requiring 3500 tons, is the largest of the week's structural jobs totaling 23,000 tons. Award of 8000 tons of reinforcing bars has been made for a viaduct in Philadelphia.

Steel barrels to the number of 626,812 were manufactured in June, making it the largest month in a record which goes back to 1920.

June sales of sheets by the independent manufacturers were 41 per cent more than in May. Production was barely 1 per cent above the May output, so that the indicated accumulation of sheet business is of good proportions.

July has made a good record in sheet sales, but the effort to get higher prices has not met with success. Some Ohio mills in naming a Valley rather than a Pittsburgh base are making a concession of $2 a ton.

In the recent foundry pig iron buying movement in the Middle West, Cleveland interests booked about 700,000 tons for third quarter and last half. With that large backlog, Cleveland competition for business naturally tributary to other furnaces has abated.

Not only have coal shipments to England increased in the week, but export sales of coke are now being made. These, with the closing at Pittsburgh of a domestic contract for about 90,000 tons of furnace coke for second half shipment, have strengthened the coke market, as high as $3.25 having been paid on export business.

Germany will supply a large part of the coke now being bought on the Pacific Coast with the stoppage of British shipments.

A stronger fuel situation in the fall is looked for at Pittsburgh, especially if there is stocking of coal against the termination of the Jacksonville scale agreement on April 1.

Notable in world markets are contracts for 500,000 tons of rails placed by the German railroads with the Stahlwerksverband. The French de Wendel works booked 12,000 tons for Turkey against German competition. The Algoma Steel Corporation's mill at the Soo has entered 10,600 tons for the Canadian Pacific, and 6000 tons for the Wabash.

Tin plate in Great Britain still brings the equivalent of $6.20 per base box, f.o.b. works, out of stock, but for shipment after the coal strike, it has sold at $4.95.

THE IRON AGE pig iron composite price remains at $19.46 per gross ton, the low point of the year reached last week.

The finished steel composite price is unchanged for the fifth consecutive week at 2.431c. per lb.

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics
At Date, One Week, One Month, and One Year Previous

For Early Delivery

Pig Iron, Per Gross Ton:	July 20, 1926	July 13, 1926	June 22, 1926	July 21, 1925
No. 2X, Philadelphia‡	$22.26	$22.26	$22.76	$21.26
No. 2, Valley Furnace†	17.75	17.75	18.00	18.50
No. 2, Southern, Cin'ti†	24.19	24.19	24.19	22.05
No. 2, Birmingham†	21.00	21.00	21.00	18.00
No. 2 foundry, Chicago*	21.00	21.00	21.00	20.50
Basic, del'd, eastern Pa	21.00	21.00	21.25	21.50
Basic, Valley furnace	17.50	17.50	18.00	18.00
Valley Bessemer del. P'gh	20.26	20.26	20.76	20.76
Malleable, Chicago*	21.00	21.00	21.00	20.50
Malleable, Valley	17.75	17.75	18.00	18.50
Gray forge, Pittsburgh	19.01	19.01	19.26	19.76
L. S. charcoal, Chicago	29.04	29.04	29.04	29.04
Ferromanganese, furnace	88.00	88.00	88.00	115.00
Rails, Billets, etc., Per Gross Ton:				
O.-h. rails, heavy, at mill	$43.00	$43.00	$43.00	$43.00
Light rails at mill	34.00	34.00	34.00	35.84
Bess. billets, Pittsburgh	35.00	35.00	35.00	35.00
O.-h. billets, Pittsburgh	35.00	35.00	35.00	35.00
O.-h. sheet bars, P'gh	36.00	36.00	36.00	35.00
Forging billets, base, P'gh	40.00	40.00	40.00	40.00
O.-h. billets, Phila	40.30	40.30	40.30	40.30
Wire rods, Pittsburgh	45.00	45.00	45.00	45.00
	Cents	Cents	Cents	Cents
Skelp, gr. steel, P'gh, lb.	1.90	1.90	1.90	1.90
Finished Iron and Steel,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia	2.22	2.22	2.22	2.22
Iron bars, Chicago	2.00	2.00	2.00	1.95
Steel bars, Pittsburgh	2.00	2.00	2.00	2.00
Steel bars, Chicago	2.10	2.10	2.10	2.10
Steel bars, New York	2.34	2.34	2.34	2.34
Tank plates, Pittsburgh	1.90	1.90	1.90	1.90
Tank plates, Chicago	2.10	2.10	2.10	2.10
Tank plates, New York	2.24	2.24	2.24	2.14
Beams, Pittsburgh	2.00	2.00	2.00	2.00
Beams, Chicago	2.10	2.10	2.10	2.10
Beams, New York	2.34	2.34	2.24	2.34
Steel hoops, Pittsburgh	2.50	2.50	2.50	2.40

Sheets, Nails and Wire,	July 20, 1926	July 13, 1926	June 22, 1926	July 21, 1925
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh	3.10	3.10	3.10	3.15
Sheets, black, No. 28, Chicago dist. mill	3.25	3.25	3.25	3.30
Sheets, galv., No. 28, P'gh	4.25	4.25	4.25	4.20
Sheets, galv., No. 28 Chicago dist. mill	4.40	4.40	4.50	4.30
Sheets, blue, 9 & 10, P'gh	2.30	2.30	2.30	2.30
Sheets, blue, 9 & 10, Chicago dist. mill	2.40	2.40	2.40	2.40
Wire nails, Pittsburgh	2.65	2.65	2.65	2.65
Wire nails, Chicago dist. mill	2.70	2.70	2.70	2.70
Plain wire, Pittsburgh	2.50	2.50	2.50	2.50
Plain wire, Chicago dist. mill	2.55	2.55	2.55	2.55
Barbed wire, galv., P'gh	3.35	3.35	3.35	3.35
Barbed wire, galv., Chicago dist. mill	3.40	3.40	3.40	3.40
Tin plate, 100 lb. box, P'gh	$5.50	$5.50	$5.50	$5.50
Old Material, Per Gross Ton:				
Carwheels, Chicago	$16.50	$16.50	$15.50	$17.00
Carwheels, Philadelphia	17.00	17.00	17.00	17.00
Heavy steel scrap, P'gh	17.00	17.00	16.00	18.50
Heavy steel scrap, Phila.	15.25	15.00	15.00	15.50
Heavy steel scrap, Ch'go	14.50	14.25	12.50	16.00
No. 1 cast, Pittsburgh	16.00	15.50	16.00	17.00
No. 1 cast, Philadelphia	17.00	17.00	17.00	17.50
No. 1 cast, Ch'go (net ton)	17.50	17.25	16.50	17.50
No. 1 RR. wrot. Phila.	16.50	16.50	16.50	17.50
No. 1 RR. wrot. Ch'go (net)	13.50	13.25	12.00	14.25
Coke, Connellsville, Per Net Ton at Oven:				
Furnace coke, prompt	$3.00	$2.75	$2.75	$2.90
Foundry coke, prompt	4.00	4.00	4.00	3.75
Metals,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York	14.25	14.12½	14.00	14.37½
Electrolytic copper, refinery	14.00	13.87½	13.70	14.12½
Zinc, St. Louis	7.45	7.52½	7.12½	7.25
Zinc, New York	7.80	7.87½	7.47½	7.60
Lead, St. Louis	8.50	8.20	8.10	8.00
Lead, New York	8.65	8.40	8.35	8.35
Tin (Straits), New York	63.37½	62.62½	61.37½	58.50
Antimony (Asiatic), N. Y.	14.50	14.00	13.00	16.50

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.
†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

Pittsburgh

Active Demand for Pipe and Tin Plate Sustains Output—Export Coke Business

PITTSBURGH, July 20.—The steel industry is passing over the mid-summer period without material slackening either in demand or production. Actually the revival in business which marked the latter part of June seems to be gathering momentum, notably in the case of pipe and tin plate, and ingot production averages just a little higher in this and nearby districts than it did a week ago. There has been a further gain in production in the Youngstown district, and for this general area ingot output now is well up toward 80 per cent of capacity. Seemingly the urgency of the demand for pipe and tin plate is making it necessary for steel works to keep up a high rate of steel production for skelp and sheet bars.

The automobile industry is furnishing more tonnage, but demands from the railroads still are very moderate and shipments of fabricated steel are running ahead of new business. On all sides there is much satisfaction that business is holding up as well as it is and except for sheets and cold-rolled strips, in which price irregularity continues, the price structure provides no reason for complaint. A very ample supply of pig iron in relation to the demand makes for continued weakness in that product, but on the other hand the scrap market still reflects nervousness on the part of dealers who sold short at lower prices. Because of their purchases the floating supply is very meager, and a demand from consumers would mean sharp advances.

The demand for fuel on account of the British coal strike is expanding and lately has embraced a few fair-sized cargoes of furnace coke, which were sold at much higher prices than domestic consumers have been called on to pay. The British strike is bringing additional export coal business to this country, and there is a possibility of a very strong situation later in the year if this demand continues and present plans of industries and railroads to stock coal do not miscarry.

Pig Iron.—The market is certainly no stronger than it has been, but there has been no real test in the form of sizable inquiries until the last day or two, and the business which has come before the market has not yet been closed. Another week should indicate whether the market is going higher or lower. The Westinghouse Electric & Mfg. Co. has put out an inquiry for 1000 tons of foundry iron and 500 tons of Bessemer iron for delivery over the remainder of the year to its Trafford, Pa., plant. The Pittsburgh Valve & Fittings Co. is in the market for 500 tons of foundry iron, and a larger user of Bessemer iron at Latrobe, Pa., is getting prices on a round tonnage of that grade. There is no inquiry at all for basic iron. Suggestions that the steel companies are melting more basic iron than they are producing do not seem well founded in view of the fact that all have idle capacity and most of them probably can make basic iron at a lower cost than they could buy the right sort of scrap. The Carnegie Steel Co. recently took off one of its Edgar Thomson furnaces, and the Wheeling Steel Corporation has blown out a Steubenville, Ohio, furnace, which will be rebuilt and enlarged. The Cherry Valley stack of the M. A. Hanna Co. will stop production this week, and there will be a three weeks' suspension of its Dover, Ohio,

furnaces for relining. Against these losses is the starting up of the Clinton Iron & Steel Co. furnace last Friday.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being $1.76 per gross ton:

Basic	$17.50
Bessemer	$18.50 to 19.00
Gray forge	17.25 to 17.50
No. 2 foundry	17.75 to 18.00
No. 3 foundry	17.25 to 17.50
Malleable	17.75 to 18.00
Low phosphorus, copper free	27.50

Ferroalloys.—The story of the market in the more commonly used ferroalloys is in specifications against contracts, as large users have covered against their requirements for the remainder of the year, and new business necessarily cannot amount to much. Specifications are reported good. Manufacturers are well sold, but consumers by the same token are well protected. This situation does not permit much change in prices. Prices are given on page 245.

Semi-Finished Steel.—Non-integrated steel manufacturers still are taking semi-finished steel in much the same way that users of finished products are buying, i. e., in strict accordance with actual needs. In an effort to secure more favorable prices, the argument commonly advanced is that on the basis of the present market value of pig iron and scrap there is room for a cut in the prices of billets, slabs and sheet bars. There is no evidence, however, that buyers have succeeded in securing supplies at concessions. Wire rods are moving steadily at unchanged prices. Skelp is moving rather freely, but as pipe makers who buy their skelp usually draw from a regular source, there is no open market evidence of activity. Prices are given on page 245.

Steel and Iron Bars.—There are enough carload lot sales of merchant steel bars at 2.10c., base Pittsburgh, to warrant the inclusion of that price in the quoted range, but insistence on that price to the small-lot buyer is neither so strong nor so general as it was just after it was announced. Actually, the carload lot price is 2c., base, just as it has been for the past year, except for a few brief periods when the small-lot buyers could get supplies at 1.90c. Specifications against low-priced business placed just before the mills took a firmer stand continue good, and with the day-to-day orders provide a relatively high operation of bar mills for the time of year.

Plates.—The effort to put the market on a base of 2c., Pittsburgh, for small lots has not met with much success and is not being pushed. Actually the market is back to 1.90c. for carload lots. Plate production is fairly heavy for tanks, barges and for pipe, but the lack of important railroad car business is sorely felt. The Midland Barge Co., Midland, Pa., is low bidder for 15 steel barges for the Upper Mississippi Barge Line. Approximately 2500 tons of steel will be required.

Wire Products.—A small Pittsburgh district producer, with practically the same rate of freight as Pittsburgh mills to most destinations, lately has been quoting nails at $2.60, base, per keg. This is the only disturbing note in an otherwise fairly well stabilized price situation.

Rails and Track Supplies.—Makers are well through their order books for 1926 rails, and a let-down on mill operations is not far off, despite a fair amount of supplementary buying by roads which bought last fall and from roads which covered then for only their first half needs. Orders were heavy and will show up strongly in the statistics of steel distribution. Strictly new business in spikes and other track accessories is moderate in this district. Light rails are selling steadily, and an effort is still being made to get a more profitable price. Prices are given on page 243.

Tubular Goods.—There is an urgency to the demand for lap-welded pipe that calls for virtually full operation of available capacity if the deliveries required are to be satisfied. Even with this high engagement, however, mills cannot promise delivery of the popular sizes of oil country pipe in less than four weeks, and some makers say six and eight weeks. There was not the usual stocking up by oil country jobbers this year, and when the demand began to gather momentum the mills had considerable tonnage in line pipe, which does not go through the mills as rapidly as the smaller sizes and ties up capacity for longer periods. All makers have good backlogs in oil country goods. Demand for butt-welded pipe is strong, but not heavy enough to cause any delay in deliveries. Prices are firm, with the secondary markets showing little of the weakness that marked them a year ago. Boiler tube business is fairly good, but not of sufficient volume to give all a share, and prices consequently still are favorable to buyers. The National Tube Co. has discontinued the manufacture of lap-welded boiler tubes up to 4 in. in diameter and now is making only seamless tubes in those sizes. Discounts are given on page 243.

Sheets.—Business still is on the increase, as is attested by the fact that mill operations have risen to 75 per cent of capacity, and there is an even higher engagement of capacity in Youngstown, where many of the mills accumulated business during the suspension following the Fourth of July. In a general way, prices are steadier than they were a few weeks ago. Little or no change has taken place in the past two weeks in what are regarded as the ruling prices, but it would be drawing too rosy a picture to say that concessions from these levels had disappeared or that the market is shaping itself for an advance. With 35 producers seeking business and the railroads giving real delivery service, buyers have all the advantage in the situation. Prices are given on page 243.

Tin Plate.—Manufacturers of tin plate, so far as production and demand are concerned, occupy almost if not fully as favorable a position as they did before

THE IRON AGE Composite Prices

Finished Steel

July 20, 1926, 2.431c. Per Lb.

One week ago	2.431c.
One month ago	2.431c.
One year ago	2.439c.
10-year pre-war average	1.689c.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets. These products constitute 88 per cent of the United States output of finished steel.

	High		Low	
1926	2.453c.,	Jan. 5;	2.403c.,	May 18
1925	2.560c.,	Jan. 6;	2.396c.,	Aug. 18
1924	2.789c.,	Jan. 15;	2.460c.,	Oct. 14
1923	2.824c.,	April 24;	2.446c.,	Jan. 2

Pig Iron

July 20, 1926, $19.46 Per Gross Ton

One week ago	$19.46
One month ago	19.79
One year ago	18.96
10-year pre-war average	15.72

Based on average of basic and foundry irons, the basic being Valley quotation, the foundry an average of Chicago, Philadelphia and Birmingham.

	High		Low	
1926	$21.54,	Jan. 5;	$19.46,	July 13
1925	22.50,	Jan. 13;	18.96,	July 7
1924	22.88,	Feb. 26;	19.21,	Nov. 3
1923	30.86,	March 20;	20.77,	Nov. 20

Mill Prices of Finished Iron and Steel Products

Iron and Steel Bars

Soft Steel

	Base Per Lb.
F.o.b. Pittsburgh mills	2.00c. to 2.10c.
F.o.b. Chicago	2.10c.
Del'd Philadelphia	2.32c.
Del'd New York	2.34c.
Del'd Cleveland	2.19c.
F.o.b. Birmingham	2.15c. to 2.25c.
C.i.f. Pacific ports	2.35c.
F.o.b. San Francisco mills	2.35c. to 2.40c.

Billet Steel Reinforcing

F.o.b. Pittsburgh mills	2.00c. to 2.10c.

Rail Steel

F.o.b. mill	1.80c. to 1.90c.
F.o.b. Chicago	2.00c.

Iron

Common iron, f.o.b. Chicago	2.00c.
Refined iron, f.o.b. P'gh mills	3.00c.
Common iron, del'd Philadelphia	2.22c.
Common iron, del'd New York	2.24c.

Tank Plates

	Base Per Lb.
F.o.b. Pittsburgh mill	1.90c.
F.o.b. Chicago	2.10c.
F.o.b. Birmingham	2.05c. to 2.15c.
Del'd Cleveland	2.09c.
Del'd Philadelphia	2.22c.
Del'd New York	2.24c.
C.i.f. Pacific ports	2.25c. to 2.30c.

Structural Shapes

	Base Per Lb.
F.o.b. Pittsburgh mill	2.00c. to 2.10c.
F.o.b. Chicago	2.10c.
F.o.b. Birmingham	2.15c. to 2.25c.
Del'd Cleveland	2.19c.
Del'd Philadelphia	2.22c. to 2.32c.
Del'd New York	2.24c. to 2.34c.
C.i.f. Pacific ports	2.30c. to 2.35c.

Hot-Rolled Flats (Hoops, Bands and Strips)

	Base Per Lb.
All gages, narrower than 6 in., P'gh	2.50c.
All gages, 6 in. and wider, P'gh	2.30c.
All gages, 6 in. and narrower, Chicago	2.60c.
All gages, wider than 6 in., Chicago	2.50c.
Cotton ties, f.o.b. Atlantic ports, per bundle of 45 lb.	$1.22
Cotton ties, f.o.b. Gulf ports, per bundle of 45 lb.	1.20

Cold-Finished Steel

	Base Per Lb.
Bars, f.o.b. Pittsburgh mills	2.50c.
Bars, f.o.b. Chicago	2.50c.
Bars, Cleveland	2.55c.
Shafting, ground, f.o.b. mill	*2.70c. to 3.00c.
Strips, f.o.b. Pittsburgh mills	3.60c. to 3.75c.
Strips, f.o.b. Cleveland mills	3.60c.
Strips, delivered Chicago	3.90c. to 4.05c.
Strips, f.o.b. Worcester mills	4.05c.

*According to size.

Wire Products

(To jobbers in car lots f.o.b. Pittsburgh and Cleveland)

	Base Per Keg
Wire nails	$2.65
Galv'd nails, 1-in. and longer	4.65
Galv'd nails, shorter than 1 in.	4.90
Galvanized staples	3.35
Polished staples	3.10
Cement coated nails	2.65

	Base Per 100 Lb.
Bright plain wire, No. 9 gage	$2.50
Annealed fence wire	2.65
Spring wire	3.50
Galv'd wire, No. 9	3.10
Barbed wire, galv'd	3.35
Barbed wire, painted	3.10

Chicago district mill and delivered Chicago prices are $1 per ton above the foregoing. Birmingham mill prices $3 a ton higher; Worcester, Mass., mill $3 a ton higher on production of that plant; Duluth, Minn., mill $2 a ton higher; Anderson, Ind., $1 higher.

Woven Wire Fence

	Base to Retailers Per Net Ton
F.o.b. Pittsburgh	$65.00
F.o.b. Cleveland	65.00
F.o.b. Anderson, Ind.	66.00
F.o.b. Chicago district mills	67.00
F.o.b. Duluth	68.00
F.o.b. Birmingham	68.00

Sheets

Blue Annealed

	Base Per Lb.
Nos. 9 and 10, f.o.b. Pittsburgh	2.30c.
Nos. 9 and 10, f.o.b. Ch'go dist. mill	2.40c.
Nos. 9 and 10, del'd Philadelphia	2.62c. to 2.72c.

Box Annealed, One Pass Cold Rolled

No. 28, f.o.b. Pittsburgh	3.10c. to 3.15c.
No. 28, f.o.b. Ch'go dist. mill	3.25c. to 3.30c.
No. 28, del'd Philadelphia	3.32c. to 3.47c.

Galvanized

No. 28, f.o.b. Pittsburgh	4.20c. to 4.30c.
No. 28, f.o.b. Chicago dist. mill	4.40c.
No. 28, del'd Philadelphia	4.62c. to 4.72c.

Tin Mill Black Plate

No. 28, f.o.b. Pittsburgh	3.10c. to 3.15c.
No. 28, f.o.b. Chicago dist. mill	3.25c.

Automobile Body Sheets

No. 28, f.o.b. Pittsburgh	4.20c.

Long Ternes

No. 28, 8-lb. coating, f.o.b. mill	4.75c.

Tin Plate

	Per Base Box
Standard cokes, f.o.b. P'gh district mills	$5.50
Standard cokes, f.o.b. Gary and Elwood, Ind.	5.60

Terne Plate

(*F.o.b. Morgantown or Pittsburgh*)

(Per package, 20 x 28 in.)

8-lb. coating, 100 lb. base	$11.40
8-lb. coating I.C.	11.70
15-lb. coating I.C.	14.85
20-lb. coating I.C.	$16.20
25-lb. coating I.C.	17.90
30-lb. coating I.C.	19.45
40-lb. coating I.C.	21.65

Alloy Steel Bars

(F.o.b. Pittsburgh or Chicago)

S. A. E. Series Numbers		Base Per 100 Lb.
2100*	(½% Nickel, 0.10% to 0.20% Carbon)	$3.20 to $3.25
2300	(3½% Nickel)	4.40 to 4.50
2500	(5% Nickel)	5.50 to 5.65
3100	(Nickel Chromium)	3.40 to 3.50
3200	(Nickel Chromium)	5.00 to 5.25
3300	(Nickel Chromium)	7.00 to 7.25
3400	(Nickel Chromium)	6.25 to 6.50
5100	(Chromium Steel)	3.40 to 3.50
5200*	(Chromium Steel)	7.00 to 7.50
6100	(Chrom. Vanadium bars)	4.30
6100	(Chrom. Vanad. spring steel)	3.80
9250	(Silicon Manganese spring steel)	3.20 to 3.25
	Carbon Vanadium (0.45% to 0.55% Carbon, 0.15% Vanad.)	4.10 to 4.20
	Nickel Chrome Vanadium (0.60 Nickel, 0.50 Chrom., 0.15 Vanad.)	4.30
	Chromium Molybdenum bars (0.80—1.10 Chrom., 0.25—0.40 Molyb.)	4.25 to 4.35
	Chromium Molybdenum bars (0.50—0.70 Chrom., 0.15—0.25 Molyb.)	3.40 to 3.50
	Chromium Molybdenum spring steel (1—1.25 Chrom., 0.30—0.50 Molybdenum)	4.50 to 4.75

Above prices are for hot-rolled steel bars, forging quality. The ordinary differential for cold-drawn bars is 1c. per lb. higher. For billets 4 x 4 to 10 x 10 in. the price for a gross ton is the net price for bars of the same analysis. For billets under 4 x 4 in. down to and including 2½-in. squares, the price is $5 a gross ton above the 4 x 4 billet price.

*Not S. A. E. specifications, but numbered by manufacturers to conform to S. A. E. system.

Rails

	Per Gross Ton
Standard, f.o.b. mill	$43.00
Light (from billets), f.o.b. mill	$34.00 to 35.00
Light (from rail steel), f.o.b. mill	32.00 to 33.00
Light (from billets), f.o.b. Ch'go mill	36.00 to 38.00

Track Equipment

(F.o.b. Mill)

	Base Per 100 Lb.
Spikes, 5/16 in. and larger	$2.80 to $3.00
Spikes, ½ in. and smaller	2.90 to 3.25
Spikes, boat and barge	3.25
Track bolts, all sizes	3.90 to 4.50
Tie plates, steel	2.25 to 2.35
Angle bars	2.75

Welded Pipe

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills

Butt Weld

Steel Inches	Black	Galv.	Iron Inches	Black	Galv.
⅛	45	19½	¼ to ⅜	+11	+39
¼ to ⅜	51	25½	½	22	2
½	56	42½	¾	28	11
¾	60	48½	1 to 1½	30	12
1 to 3	62	50½			

Lap Weld

2	55	43½	2	23	7
2½ to 6	59	47½	2½	26	11
7 and 8	56	43½	3 to 6	28	13
9 and 10	54	41½	7 to 12	26	11
11 and 12	53	40½			

Butt Weld, extra strong, plain ends

⅛	41	24½	¼ to ⅜	+19	+54
¼ to ⅜	47	30½	½	21	7
½	53	42½	¾	28	12
¾	58	47½	1 to 1½	30	14
1 to 1½	60	49½			
2 to 3	61	50½			

Lap Weld, extra strong, plain ends

2	53	42½	2	23	9
2½ to 4	57	46½	2½ to 4	29	15
4½ to 6	56	45½	4½ to 6	28	14
7 to 8	52	39½	7 to 8	21	7
9 and 10	45	32½	9 to 12	16	2
11 and 12	44	31½			

To the large jobbing trade the above discounts on steel pipe are increased on black by one point, with supplementary discount of 5%, and on galvanized by 1½ points, with supplementary discount of 5%. On iron pipe, both black and galvanized, the above discounts are increased to large jobbers by one point with supplementary discounts of 5 and 2½%.

Note.—Chicago district mills have a base two points less than the above discounts. Chicago delivered base is 2½ points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point producing the lowest price to destination.

Boiler Tubes

Base Discounts, f.o.b. Pittsburgh

Lap Welded Steel		Charcoal Iron	
2 to 2¼ in.	27	1½ in.	+18
2½ to 2¾ in.	37	1¾ to 1⅞ in.	+ 8
3 in.	40	2 to 2¼ in.	— 2
3¼ to 3¾ in.	42½	2½ to 3 in.	— 7
4 to 13 in.	46	3¼ to 4½ in.	— 9

Beyond the above discounts, 5 to 7 fives extra are given on lap welded steel tubes and 2 tens to 2 tens and 1 five on charcoal iron tubes.

Standard Commercial Seamless Boiler Tubes

Cold Drawn

1 in.	60	3 in.	45
1¼ to 1½ in.	52	3¼ to 3½ in.	47
1¾ in.	36	4 in.	50
2 to 2¼ in.	31	4½, 5 and 6 in.	45
2½ to 2¾ in.	39		

Hot Rolled

2 and 2¼ in.	34	3¼ and 3½ in.	50
2½ and 2¾ in.	42	4 in.	53
3 in.	48	4½, 5 and 6 in.	48

Less carloads, 4 points less. Add $8 per net ton for more than four gages heavier than standard. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be held at mechanical tube list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Mechanical Tubing

	Per Cent Off List
Carbon, 0.10% to 0.30%, base	55
Carbon, 0.30% to 0.40%, base	50

Plus differentials for lengths over 18 ft. and for commercially exact lengths. Warehouse discounts on small lots are less than the above.

the slight let-down in June, which resulted from uncertainty as to the outcome of the packing crops. Pacific Coast requirements proved even larger than earlier estimates, and now that crops in the Central West are much heavier than expected, there is a strong demand from that direction, not only for unspecified tonnages, but for supplementary ones. Wisconsin for the third successive year will have a huge pea crop. There is also a lively export demand created by the tie-up of British plants by the coal strike. Leading manufacturers in this district are now entirely committed against production through September, and October is as early as delivery is being promised against new business. The American Sheet & Tin Plate Co. last week operated 17 turns at seven of its 10 plants. Tin plate production is close to 90 per cent of theoretical capacity.

Cold-Finished Steel Bars.—Demand is notable more for its constancy than the size of the individual orders. Consumers can get what they want when they want it, so that short range buying has been safe. Prices are as steady as the demand, with ordinary tonnages still quoted at 2.50c., base Pittsburgh.

Structural Steel.—On new business the market is firm at 2c., base Pittsburgh, on large structural shapes, but only a small part of current mill shipments carries that figure, since important fabricators were given generous coverage before the advance. The mills want 2.10c., base, on small lots and are getting that price where delivery is urgent, but the real market may be appraised at 2c., which is not being shaded even on large tonnages. Structural shops in this area find incoming business running behind completed orders.

Hot-Rolled Strips.—The limbering up of the automobile industry is bringing on a larger demand for strips for stampings and cold rolling, but it runs stronger in the wider than in the narrow material. Mills rolling the latter need business, as this season's requirements of cotton ties have been rolled and cooperage demands are moderate. Prices are steady at recent levels.

Cotton Ties.—Makers based production of ties on a cotton crop this year of about the same size as last year and with a fair-sized carry-over of ties from last year, only a substantially larger yield will bring supplementary tie business. Rollings have been completed, and shipments to distributing points are practically over.

Cold-Rolled Strips.—Business is increasing, but prices continue irregular and favorable to buyers whose requirements are regarded as attractive. Makers here call the market 3.60c. to 3.75c., base Pittsburgh or Cleveland, depending on the tonnage, but even lower prices are reported to have been made by small producers without regular consuming connections. On fender stock the ordinary quotation of $1 per 100 lb. over automobile body sheets is being shaded as much as $4 per ton.

Warehouse Prices, f.o.b. Pittsburgh

	Base per Lb.
Tank plates	3.00c.
Structural shapes	3.00c.
Soft steel bars and small shapes	2.90c.
Reinforced steel bars	2.90c.
Black sheets (No. 28 gage), 25 or more bundles	4.00c.
Galvanized sheets (No. 28 gage), 25 or more bundles	5.05c.
Blue annealed sheets (No. 10 gage), 25 or more sheets	3.55c.
Cold-finished shafting and screw stock—	
Rounds and hexagons	3.60c.
Squares and flats	4.10c.
Bands	3.60c.
Spikes, large	3.30c.
Small	3.80c. to 5.25c.
Boat	3.80c.
Bolts, track	4.90c.
Wire, black soft annealed, base per 100 lb.	$3.00
Wire, galvanized soft, base per 100 lb.	3.00
Common wire nails, per keg	3.00
Cement coated nails	3.05

Bolts, Nuts and Rivets.—Orders for bolts and nuts are being booked steadily. Individual orders run small, since buyers are holding down purchases to early needs. This, however, is typical of the demand for most finished steel products, and makers seem to have adjusted themselves to the situation sufficiently so that there is no tendency toward price concessions to bring about larger purchases. Most makers of large rivets are quoting $2.60, base, per 100 lb., Pittsburgh, but that price is subject to concession. Prices and discounts are given on page 245.

Coke and Coal.—The spot furnace coke market has strengthened very materially during the past week, as some fair-sized sales for export coupled with the closing of a large contract calling for between 15,000 and 16,000 tons a month for the remainder of the year has caused some shortage of supplies for prompt shipment. The market today is quotable at $3 per net ton at ovens, and on export business as high as $3.25 has been done. The price on the contract tonnage is $3. The export demand for coal continues to expand because England, which has been importing between 700 and 800 tons of coal weekly, about half of which has been coming from Belgium, France and Germany, will have to depend more on American coal than previously since shipments from France have been stopped. A good deal of the American coal has been going from the Southern fields, but lately a considerable tonnage has been taken in western Pennsylvania and this demand has stiffened prices. Unless there is an early termination of the British strike, it looks like a much stronger fuel situation, since there continue to be strong indications of a stocking movement by industrial companies and railroads over the fall and through the winter in preparation for the termination of the Jacksonville wage scale agreement on April 1. Supplies of spot foundry coke are ample for current requirements, and prices are steady.

Old Material.—There is not much consumer demand for scrap, but because of the experiences dealers have had in covering against sales made at lower prices, and the fact that offerings still are scant, there is considerable caution about sales at these levels. There are varying views about the situation. There is the possibility that speculative operations may carry the market to levels that will enable dealers to dispose of their stocks to advantage, but also the possibility that yard stocks may be worked off against sales that could not be covered in the open market except at a greater loss. The steel makers regard the market merely as a 60-day affair, i. e., one in which dealers have sold for delivery in 60 days, and, nearing the end of the period, are obliged to cover. This suggests a belief in lower prices in the near future. Steel mills also have a whip hand in idle blast furnaces. Prices are higher here and there in the list, but in the main are at the levels of a week ago.

We quote for delivery to consumer's mill in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

Per Gross Ton

Heavy melting steel		$17.00
No. 1 cast, cupola size	$16.00 to	16.50
Rails for rolling, Newark and Cambridge, Ohio; Cumberland, Md.; Huntington, W. Va., and Franklin, Pa.	17.00 to	18.00
Compressed sheet steel	15.50 to	16.00
Bundled sheets, sides and ends	14.50 to	15.00
Railroad knuckles and couplers	18.50 to	19.00
Railroad coil and leaf springs	18.50 to	19.00
Low phosphorus blooms and billet ends	21.00 to	21.50
Low phosphorus mill plates	20.50 to	21.00
Low phosphorus miscellaneous	18.50 to	19.00
Low phosphorus punchings	18.50 to	19.00
Steel car axles	21.00 to	21.50
Cast iron wheels	16.50 to	17.00
Rolled steel wheels	18.50 to	19.00
Machine shop turnings	11.50 to	12.00
Short shoveling turnings	12.75 to	13.25
Sheet bar crops	18.00 to	19.00
Heavy steel axle turnings	15.00 to	15.50
Short mixed borings and turnings	12.50 to	13.00
Heavy breakable cast	14.50 to	15.00
Cast iron borings	12.50 to	13.00
No. 1 railroad wrought	13.00 to	13.50
No. 2 railroad wrought		17.00
Railroad or automobile malleable scrap	18.00 to	18.50

Semi-Finished Steel, Raw Materials, Bolts and Rivets

Mill Prices of Semi-Finished Steel

F. o. b. Pittsburgh or Youngstown

Billets and Blooms

	Per Gross Ton
Rolling, 4-in. and over	$35.00
Rolling, 2-in. and smaller	36.00
Forging, ordinary	40.00
Forging, guaranteed	45.00

Sheet Bars

	Per Gross Ton
Open-hearth or Bessemer	$36.00

Slabs

	Per Gross Ton
8 in. x 2 in. and larger	$35.00
6 in. x 2 in. and smaller	36.00

Skelp

	Per Lb.
Grooved	1.90c.
Sheared	1.90c.
Universal	1.90c.

Wire Rods

	Per Gross Ton
*Common soft, base	$45.00
Screw stock	$5.00 per ton over base
Carbon 0.20% to 0.40%	3.00 per ton over base
Carbon 0.41% to 0.55%	5.00 per ton over base
Carbon 0.56% to 0.75%	7.50 per ton over base
Carbon over 0.75%	10.00 per ton over base
Acid	15.00 per ton over base

*Chicago mill base is $46. Cleveland mill base, $45.

Prices of Raw Materials

Ores

Lake Superior Ores, Delivered Lower Lake Ports

	Per Gross Ton
Old range Bessemer, 51.50% iron	$4.55
Old range non-Bessemer, 51.50% iron	4.40
Mesabi Bessemer, 51.50% iron	4.40
Mesabi non-Bessemer, 51.50% iron	4.25
High phosphorus, 51.50% iron	4.15

Foreign Ore, c.i.f. Philadelphia or Baltimore

	Per Unit
Iron ore, low phos., copper free, 55 to 58% iron in dry Spanish or Algerian	9.50c. to 10c.
Iron ore, Swedish, average 66% iron	9.50c.
Manganese ore, washed, 51% manganese, from the Caucasus	42c.
Manganese ore, Brazilian or Indian, nominal	42c. to 44c.
Tungsten ore, high grade, per unit, in 60% concentrates	$11.75 to $12.50

	Per Ton
Chrome ore, Indian basic, 48% Cr_2O_3, crude, c.i.f. Atlantic seaboard	$22.00 to $23.00

	Per Lb.
Molybdenum ore, 85% concentrates of MoS_2, delivered	55c. to 60c.

Coke

	Per Net Ton
Furnace, f.o.b. Connellsville prompt	$3.00
Foundry, f.o.b. Connellsville prompt	$4.00 to 4.50
Foundry, by-product, Ch'go ovens	9.75
Foundry, by-product, New England, del'd	12.00
Foundry, by-product, Newark or Jersey City, delivered	9.75 to 10.77
Foundry, Birmingham	5.50 to 6.00
Foundry, by-product, St. Louis or Granite City	10.00

Coal

	Per Net Ton
Mine run steam coal, f.o.b. W. Pa. mines	$1.40 to $1.75
Mine run coking coal, f.o.b. W. Pa. mines	1.50 to 1.75
Mine run gas coal, f.o.b. Pa. mines	1.85 to 2.00
Steam slack, f.o.b. W. Pa. mines	1.15 to 1.25
Gas slack, f.o.b. W. Pa. mines	1.25 to 1.35

Ferromanganese

	Per Gross Ton
Domestic, 80%, furnace or seab'd.	$88.00 to $95.00
Foreign, 80%, Atlantic or Gulf port, duty paid	88.00

Spiegeleisen

	Per Gross Ton Furnace
Domestic, 19 to 21%	$32.00 to $34.00
Domestic, 16 to 19%	31.00 to 33.00

Electric Ferrosilicon

	Per Gross Ton Delivered
50%	$85.00 to $87.50
75%	145.00 to 150.00

Per Gross Ton Furnace		*Per Gross Ton Furnace*	
10%	$42.00	12%	$42.00
11%	42.00	14 to 16%	$45 to 46.00

Bessemer Ferrosilicon

F.o.b. Jackson County, Ohio, Furnace

Per Gross Ton		*Per Gross Ton*	
10%	$33.00	12%	$37.00
11%	35.00		

Silvery Iron

F.o.b. Jackson County, Ohio, Furnace

Per Gross Ton		*Per Gross Ton*	
6%	$25.50	10%	$31.00
7%	26.50	11%	33.00
8%	27.50	12%	35.00
9%	29.00		

Other Ferroalloys

Ferrotungsten, per lb. contained metal, del'd	$1.05 to $1.20
Ferrochromium, 4% carbon and up, 60 to 70% Cr., per lb. contained Cr. delivered	11.50c.
Ferrovanadium, per lb. contained vanadium, f.o.b. furnace	$3.25 to $4.00
Ferrocarbontitanium, 15 to 18%, per net ton, f.o.b. furnace, in carloads	$200.00
Ferrophosphorus, electric or blast furnace material, in carloads, 18%, Rockdale, Tenn., base, per net ton	$91.00
Ferrophosphorus, electric, 24%, f.o.b. Anniston, Ala., per net ton	$122.50

Fluxes and Refractories

Fluorspar

	Per Net Ton
Domestic, 85% and over calcium fluoride, not over 5% silica, gravel, f.o.b. Illinois and Kentucky mines	$18.00
No. 2 lump, Illinois and Kentucky mines	$20.00
Foreign, 85% calcium fluoride, not over 5% silica, c.i.f. Atlantic port, duty paid,	$17.50 to $17.75
Domestic, No. 1 ground bulk, 95 to 98% calcium fluoride, not over 2½% silica, f.o.b. Illinois and Kentucky mines	$32.50

Fire Clay

	Per 1000 f.o.b. Works	
	High Duty	Moderate Duty
Pennsylvania	$40.00 to $43.00	$38.00 to $40.00
Maryland	43.00 to 46.00	38.00 to 40.00
New Jersey	55.00 to 75.00	
Ohio	40.00 to 43.00	38.00 to 40.00
Kentucky	40.00 to 43.00	38.00 to 40.00
Illinois	40.00 to 43.00	35.00 to 38.00
Missouri	40.00 to 43.00	35.00 to 38.00
Ground fire clay, per ton	6.50 to 7.50	

Silica Brick

	Per 1000 f.o.b. Works
Pennsylvania	$40.00
Chicago	49.00
Birmingham	50.00
Silica clay, per ton	$8.00 to 9.00

Magnesite Brick

	Per Net Ton
Standard size, f.o.b. Baltimore and Chester, Pa.	$65.00
Grain magnesite, f.ob. Baltimore and Chester, Pa.	40.00

Chrome Brick

	Per Net Ton
Standard size	$45.00 to $48.00

Mill Prices of Bolts, Nuts, Rivets and Set Screws

Bolts and Nuts

(Less-than-Carload Lots)

(F.o.b. Pittsburgh, Cleveland, Birmingham and Chicago)

	Per Cent Off List
Machine bolts, small, rolled threads	60 and 10
Machine bolts, all sizes, cut threads	50, 10 and 10
Carriage bolts, smaller and shorter, rolled threads	50, 10 and 10
Carriage bolts, cut threads, all sizes	50 and 10
Eagle carriage bolts	65 and 10
Lag bolts	60, 10 and 10
Plow bolts, Nos. 3 and 7 heads (Extra of 20% for other style heads)	50 and 10
Machine bolts, c.p.c. and t. nuts, ⅝ x 4 in.,	45, 10 and 5
Larger and longer sizes	45, 10 and 5
Bolt ends with hot-pressed nuts	50, 10 and 10
Bolt ends with cold-pressed nuts	45, 10 and 5
Hot-pressed nuts, blank and tapped, square,	4.00c. per lb. off list
Hot-pressed nuts, blank or tapped, hexagons,	4.40c. per lb. off list
C.p.c. and t. square or hex. nuts, blank or tapped	4.10c. per lb. off list
Washers*	6.50c. to 6.25c. per lb. off list

*F.o.b. Chicago and Pittsburgh.

The discount on machine, carriage and lag bolts is 5 per cent more than above for car lots. On hot-pressed and cold-punched nuts the discount is 25c. more per 100 lb. than quoted above for car lots.

Bolts and Nuts

(Quoted with actual freight allowed up to but not exceeding 50c. per 100 lb.)

	Per Cent Off List
Semi-finished hexagon nuts:	
⅞ in. and smaller, U. S. S.	80, 10 and 5
⅞ in. and larger, U. S. S.	75, 10 and 5
Small sizes, S. A. E.	80, 10, 10 and 5
S. A. E., ⅝ in. and larger	75, 10, 10 and 5
Stove bolts in packages	80, 10 and 5
Stove bolts in bulk	80, 10, 5 and 2½
Tire bolts	60 and 5

Semi-Finished Castellated and Slotted Nuts

(Actual freight allowed up to but not exceeding 50c. per 100 lb.)

(To jobbers and consumers in large quantities)

	Per 100 Net S.A.E.	Per 100 Net U.S.S.		Per 100 Net S.A.E.	Per 100 Net U.S.S.
¼-in.	$0.44	$0.44	¾-in.	$2.35	$2.40
5/16-in.	0.515	0.515	⅞-in.	3.60	3.60
⅜-in.	0.62	0.66	1-in.	5.65	5.80
7/16-in.	0.79	0.90	1⅛-in.	8.90	8.90
½-in.	1.01	1.05	1¼-in.	12.60	13.10
9/16-in.	1.38	1.42	1⅜-in.	18.35	18.35
⅝-in.	1.70	1.73	1½-in.	21.90	21.00

Larger sizes.—Prices on application.

Large Rivets

	Base Per 100 Lb.
F.o.b. Pittsburgh	$2.50 to $2.60
F.o.b. Cleveland	2.70
F.o.b. Chicago	2.75

Small Rivets

	Per Cent Off List
F.o.b. Pittsburgh	70 and 10
F.o.b. Cleveland	70 and 10
F.o.b. Chicago	70, 10 and 5 to 70 and 10

Cap and Set Screws

(Freight allowed up to but not exceeding 50c. per 100 lb.)

	Per Cent Off List
Milled cap screws	80 and 10
Milled standard set screws, case hardened,	80 and 5
Milled headless set screws, cut thread	80
Upset hex. head cap screws, U. S. S. thread,	80, 10 and 10
Upset hex. cap screws, S.A.E. thread,	80, 10 and 10
Upset set screws	80, 10 and 5
Milled studs	70 and 5

Chicago

Mills Feel Lack of Car Buying—Pig Iron Demand Recedes

CHICAGO, July 20.—Shipments of finished steel are still maintained at about the average rate of June, but the volume of fresh bookings is gradually declining. New business, however, is holding up surprisingly well, in view of the fact that there is still little railroad car buying. Among the sustaining influences are the tankage programs which are under way and the unusual demand for soft steel bars.

The award of 6000 tons of plates and shapes for a new Great Lakes cargo boat is a feature of the week, and purchases of steel for highway bridges are in good volume. There has been a decline in construction work in this territory, but it has affected buildings constructed of brick and timber to a greater extent than the larger type which require a steel framework. The buying programs of the railroads are arousing much interest, and the report persists that at least five or six of the major railroads entering Chicago are now preparing budgets which will call for the purchase, probably in the fall, of a substantial number of cars, as well as a sizable tonnage of rails.

The scrap market is beginning to show signs of weakness and promises to become more speculative than for some time past. Close inspection of heavy melting steel by one of the largest consumers and uneasiness on the part of country dealers are believed by some to be factors which may soon result in an oversupply of the ordinary grade of heavy melting steel in this market. Reports that consumers east of Chicago are buying in this territory are not confirmed.

Pig Iron.—The third quarter buying movement is about over and attention is centered on a few inquiries of 500 and 1000 tons each, some of which are for the fourth quarter. In contrast with the first half of the year spot buying is running below what producers consider an average for an ordinary month. In June spot buying was approximately five times this average. Shipments for July are running slightly ahead of the average for June, but producers expect them to decline in keeping with a curtailment of foundry melt during the hot weather. Operators of the Mayville B stack expect to blow out that furnace within the next few weeks for relining. A few scattered carlot sales of 14 to 16 per cent Bessemer ferrosilicon are reported at $41, base Jackson County, or $45.79, delivered.

Quotations on Northern foundry high phosphorus and malleable iron are f.o.b. local furnace, and do not include an average switching charge of 61c. per ton. Other prices are for iron delivered at consumers' yards:

Northern No. 2 foundry, sil. 1.75 to 2.25	$21.00
Northern No. 1 foundry, sil. 2.25 to 2.75	21.50
Malleable, not over 2.25 sil.	21.00
High phosphorus	$21.00 to 21.50
Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago	29.04
Southern No. 2 (all rail)	27.01
Southern No. 2 (barge and rail)	25.18
Low phos., sil. 1 to 2 per cent, copper free	29.50 to 30.00
Silvery, sil. 8 per cent	32.29
Bessemer ferrosilicon, 14 to 15 per cent	45.79

Ferroalloys.—This market as a whole is quiet, although some interest is being shown in small lots of spiegeleisen for prompt shipment. Business of this nature is bringing $34, base Hazzard, Pa., or $41.76, delivered, for the 19 to 21 per cent grade. Sellers are having some difficulty in making deliveries on spot orders. Specifications for ferrosilicon are in good volume, and a Chicago user this week has taken a carlot at $85, delivered.

We quote 80 per cent ferromanganese, $95.56, delivered Chicago; 50 per cent ferrosilicon, $85, delivered; spiegeleisen, 18 to 22 per cent, $39.76 to $41.76, delivered Chicago.

Plates.—The American Shipbuilding Co., Cleveland, has been awarded a contract for a cargo boat by the Inland Steamship Co., which is controlled by the Inland Steel Co. Plates and shapes, totaling 6000 tons will be shipped from the Indiana Harbor plant of the Inland Steel Co. Plate specifications from tank builders in this territory are in good volume, and new inquiry for this week totals about 5000 tons. On the whole, tank builders have good schedules, which extend well through the summer months. The railroad equipment market remains quiet, although it is thought in some quarters that several of the major railroads entering Chicago will soon make known their requirements, as called for in budgets which are now well along in the course of preparation. Deliveries of plates have improved somewhat within the last few weeks. The Chicago mill price is steady at 2.10c., and occasionally 2.20c. is done on small tonnages.

The mill quotation on plates is 2.10c. per lb., base, Chicago.

Structural Material.—Only a fair amount of fresh inquiry has come out during the week, and lettings are lighter than during the previous seven days. This is not looked upon by the trade as indicating a let-down in the building industry but rather as a temporary lull of short duration. Most architectural offices are busy and expect to remain active for some time to come. The decline in awards, however, is causing some concern to fabricators, whose shop schedules are not well balanced and in some cases do not extend beyond the next three to five weeks. The outstanding letting of the week was 1900 tons for the Adams-Franklin Building, Chicago. This was taken by McClintic-Marshall Co. The first unit of the Mather twin-tower building, Chicago, will require 3000 tons and miscellaneous inquiries for smaller projects total close to 8000 tons.

The mill quotation on plain material is 2.10c. per lb. base, Chicago.

Sheet Bars.—Sales for the week in this territory totaled more than 1000 tons, and prices are firm at $36 per gross ton, Chicago.

Billets.—Small billets are in good demand, and users this week have taken close to 6000 tons. The price is unchanged at $35 per gross ton, Chicago.

Cold-Rolled Bars.—Both specifications and new buying are unusually heavy, and makers are not experiencing the drop in demand which is not uncommon during July and August. Cold-rolled bars are firm at 2.50c., base per lb., Chicago.

Bars.—Consumer interest in mild steel bars remains active, and inquiry for the week was heavier than during any like period earlier in the month. Specifications against contracts are liberal, and although emanating from practically all classes of users, the greatest demand is coming from manufacturing consumers, among them the cold-drawn steel plants, automobile makers and the electrical industry. The Chicago mill price is steady at the 2.10c. for practically any sized tonnage, although occasionally 2.20c. is obtained for small tonnages. There is a slightly improved demand for alloy steel bars from the automobile industry, and prices remain steady. Bar iron is inactive, with both new buying and specifications light. Demand from the railroads is in small volume, although business from agricultural machinery makers shows some improvement. Prices are steady at 2c., Chicago. There is no change in the rate of rail steel bar shipments, although the nature of the demand has changed materially. Fence post business has taken a seasonal drop, which, however, is not so marked as during previous years. Considerable tonnage continues to go into reinforcing work, and barn equipment makers are showing more interest in the market in anticipation of the coming fall business. Specifications from the bed manufacturers are more liberal, following a show which closed last week. Rail steel bars are fairly steady at 2c., Chicago, although there are occasional reports that 1.90c. has been done.

Mill prices per lb. are: Mild steel bars, 2.10c., base, Chicago; common bar iron, 2c., base, Chicago; rail steel bars, 2c., base, Chicago.

Wire Products.—Specifications from the manufacturing trade have expanded slightly, and some interest is being shown in fourth quarter requirements, on

which mills are unwilling to quote at this time. Demand from the jobbing trade is without trend, although possibly less active than a week ago. Mills are being operated in accordance with the demand, no effort is being made to bring stocks above the minimum which has ruled throughout the winter and spring months. Buyers are taking shipments only in accordance with actual consumptive demand and are generally holding stocks to a low point. Mill prices are shown on page 243.

Rails and Track Supplies.—The Delaware, Lackawanna & Western has placed 20,000 tons of standard-section rails with an Eastern mill, and the Norfolk & Western has contracted for 17,000 kegs of spikes with a maker in Pittsburgh. Miscellaneous orders for rails taken this week by makers in Chicago territory total 4700 tons, and in addition, Western railroads have placed 5000 kegs of spikes and bolts and 1400 tons of steel tie plates. Specifications from the railroads are coming in freely, and frog and switch makers are actively in the market. There is considerable activity on the part of the railroads in planning for next year's rail requirements. One large railroad is reported to have completed its budget and has submitted it for final action and at least five other railroads entering Chicago are nearing the completion of their budgets. Rail rollings at the Gary mill this week total 16,000 tons.

Standard Bessemer and open-hearth rails, $43; light rails, rolled from billets, $36 to $38 per gross ton, f.o.b. maker's mill.

Standard railroad spikes, 2.90c. per lb. mill; track bolts with square nuts, 3.90c. mill; steel tie plates, 2.25c. to 2.35c. mill; angle bars, 2.75c. mill

Reinforcing Bars.—Competition among concrete bar dealers is keen, and a price of as low as 2.40c., warehouse, was made on a contract taking close to 500 tons. However, 2.50c. more nearly represents the market for average tonnages, while from 2.60c. to 2.75c. is being done on lots up to 25 tons each. Fresh inquiry bulks fairly large, although there is no great pressure for prompt estimates and the market is not generally so active as a week ago. So far July has been a good month, both in inquiry and orders. To date it is averaging slightly ahead of June and about equal to July of a year ago. Warehouse shipments of billet steel reinforcing bars are in good volume. New orders and fresh inquiries are shown on page 259.

Bolts, Nuts and Rivets.—From the standpoint both of number and size, contracts for the third quarter are reported as being about equal to those of the second quarter. Prices are steady except on small rivets, on which 70 and 10 to 70, 10 and 5 are the ruling prices. Small-lot sales are reported at 70 and 5 off list.

Sheets.—Sheet prices are growing a trifle stronger, as new buying and specifications improve slowly. On the whole, the situation is not satisfactory to producers, as is evidenced by the fact that one mill still keeps one of its plants idle and has the other booked only three weeks ahead. The extreme heat of the past few days has reduced the output of mills which are in operation.

Chicago delivered prices from mill are 3.30c. for No. 28 black; 2.45c. for No. 10 blue annealed; 4.45c. for No. 28 galvanized. Delivered prices at other Western points are equal to the freight from Gary plus the mill prices, which are 5c. per 100 lb. lower than the Chicago delivered prices.

Cast Iron Pipe.—Deliveries have improved slightly, ranging from about 60 days for 4 and 6-in. to 45 days on 8, 10 and 12-in. Prices are somewhat stronger at $40 to $41, base Birmingham, for diameters 6 in. and over. The American Cast Iron Pipe Co. took 125 tons of 6 and 8-in. Class B pipe for Fostoria, Ohio, at $40, base Birmingham. Waukegan, Ill., is in the market for 750 tons of 6, 8 and 12-in. Class B pipe, and it is reported that Jason Frye, Lake Forest, Ill., is low bidder. Detroit closes July 27 on 3000 tons of 36-in. Class C and 2200 tons of 6-in. Class B. Carbondale, Ill., has awarded a contract to the Hamilton-Hoffman Construction Co., which calls for about 1600 tons of 2-in. to 12-in. Class B. Newark, Ohio, is inquiring for 800 tons of 6 and 10-in. Class B pipe.

We quote per net ton, delivered, Chicago, as follows: Water pipe, 4-in., $52.20 to $53.20; 6-in. and over, $48.20 to $49.20; Class A and gas pipe, $4 extra.

Old Material.—There is less confidence in the scrap trade than a week ago, and although several grades have advanced, the tendency of scrap prices at the moment is to mark time. A large user has taken a fair tonnage of heavy melting steel at $15, delivered, but late in the week a small tonnage was placed at $14.50. Dealers in the surrounding territory appear to be uneasy about the tendency of prices and rather anxious to unload at the present level, which is not far from cost. Locally it is believed that if financial pressure continues, it will result in heavy shipments from country dealers. If this develops, it is doubtful if the present price level can be maintained. The higher prices of the last few weeks have been strongly resisted by users, who have largely refused to take material in advance of actual requirements. On the whole, the impression is gaining ground throughout the trade that the present upward movement of the market is at or near the top.

We quote delivered in consumers' yards, Chicago and vicinity, all freight and transfer charges paid for all items except relaying rails, including angle bars to match, which are quoted f.o.b. dealers' yards:

Per Gross Ton	
Heavy melting steel	$14.50 to $15.00
Frogs, switches and guards, cut apart, and miscellaneous rails	16.00 to 16.50
Shoveling steel	14.25 to 14.75
Hydraulic compressed sheets	12.50 to 13.00
Drop forge flashings	9.50 to 10.00
Forged, cast and rolled steel car wheels	18.50 to 19.00
Railroad tires, charging box size	19.50 to 20.00
Railroad leaf springs, cut apart	19.00 to 19.50
Steel couplers and knuckles	17.50 to 18.00
Coil springs	19.00 to 19.50
Low phos. punchings	17.50 to 18.00
Axle turnings, foundry grade	15.00 to 15.50
Axle turnings, blast fur. grade	13.00 to 13.50
Relaying rails, 56 to 60 lb.	25.50 to 26.50
Relaying rails, 65 lb. and heavier	26.00 to 31.00
Rerolling rails	17.25 to 17.75
Steel rails, less than 3 ft.	17.50 to 18.00
Iron rails	14.50 to 15.00
Cast iron borings	11.25 to 11.75
Short shoveling turnings	11.25 to 11.75
Machine shop turnings	8.00 to 8.50
Railroad malleable	18.00 to 18.50
Agricultural malleable	16.00 to 16.50
Angle bars, steel	16.50 to 17.00
Cast iron car wheels	16.50 to 17.00
Per Net Ton	
No. 1 machinery cast	17.50 to 18.00
No. 1 railroad cast	16.75 to 17.25
No. 1 agricultural cast	16.75 to 17.25
Stove plate	14.50 to 15.00
Grate bars	14.25 to 14.75
Brake shoes	13.75 to 14.25
Iron angle and splice bars	14.00 to 14.50
Iron arch bars and transoms	20.00 to 20.50
Iron car axles	24.50 to 25.00
Steel car axles	17.50 to 18.00
No. 1 railroad wrought	13.50 to 14.00
No. 2 railroad wrought	12.75 to 13.25
No. 1 busheling	11.50 to 12.00
No. 2 busheling	7.50 to 8.00
Locomotive tires, smooth	17.00 to 17.50
Pipes and flues	10.00 to 10.50

Warehouse Prices, f.o.b. Chicago

	Base per Lb.
Plates and structural shapes	3.10c.
Mild steel bars	3.00c.
Reinforcing bars, billet steel	2.60c.
Cold-finished steel bars and shafting—	
Rounds and hexagons	3.60c.
Flats and squares	4.10c.
Hoops	4.15c.
Bands	3.65c.
No. 28 black sheets	4.10c.
No. 10 blue annealed sheets	3.50c.
No. 28 galvanized sheets	5.25c.
Standard railroad spikes	3.55c.
Track bolts	4.55c.
Structural rivets	3.50c.
Boiler rivets	3.70c.
	Per Cent Off List
Machine bolts	50 and 5
Carriage bolts	47½
Coach or lag screws	55 and 5
Hot-pressed nuts, square, tapped or blank,	3.25c. off per lb.
Hot-pressed nuts, hexagons, tapped or blank,	3.75c. off per lb.
No. 8 black annealed wire, per 100 lb.	$3.30
Common wire nails, base, per keg	3.05
Cement coated nails, base, per keg	3.05

Cleveland

Steel Specifications Large—Demand from Automobile Industry Heavier

CLEVELAND, July 20.—The volume of orders for finished steel is surprisingly good for this season of the year. In fact, some of the mills are getting a larger tonnage than in June. There is not much new business, as orders are largely against third quarter contracts. Business is well distributed among various consuming industries. The tonnage from the automotive industry has increased now that some of the car builders are ordering steel for new models. Reports from Detroit indicate that a few of the automobile companies have increased production and others have reduced schedules and that in the aggregate the industry is operating at about the same rate as last month. Some of the parts makers in this territory are operating at a good rate and are ordering considerable steel, but others report some slackening of their business.

There was little inquiry for structural material the past week and an absence of inquiry for round lots of steel for specific work. The Nickel Plate railroad has supplemented its early season rail purchase with 1000 tons additional, which was placed with the Bethlehem Steel Co.

Outside of continued weakness in sheets, prices are being well maintained. Buyers regard the market as well stabilized, and there does not appear to be much of an effort to secure concessions. Mills are still making some attempt to secure 2.10c., Pittsburgh, for small lots of steel bars, but most small-lot orders are going at 2c. Plates are firm at 1.90c., Pittsburgh, and structural shapes at 2c.

Iron Ore.—The ore market is dull, although a few small-lot sales were made during the week. There appear to be weak spots in the market, although leading sellers are holding to regular quotations. There has been no change in the shipping schedules prepared by leading consuming interests early in the season. Ore is moving at a heavy rate, and July shipments will be close to 10,000,000 tons. The consumption of Lake ore during June was 4,834,126 tons, a decrease of 360,020 tons from May, when 5,194,146 tons were consumed. The amount of Lake ore used in June, 1925, was 3,862,953 tons. On July 1 there were 16,938,832 tons of Lake ore on hand at furnaces, and on that day the amount at furnaces and Lake Erie docks was 21,511,988 tons, as compared with 25,403,931 tons on July 1 last year. There were 189 furnaces using Lake ore in blast July 1, a loss of six for the month.

Pig Iron.—While the volume of business declined further the past week, Cleveland producers sold about 30,000 tons of foundry and malleable iron. Included in the sales were several 1000-ton lots, but the average size of the orders was smaller than during the previous week, when the market was more active. Since the buying movement started early in June, Cleveland interests have booked about 700,000 tons for the third quarter and last half. Nearly all the consumers in this territory are now covered for either the third quarter or the last half, and shipping orders are coming out in fair volume against these contracts. The firmer price attitude shown by some of the Lake producers as reported last week, due to the fact that they now have good order books, is still in evidence, and they are not showing much disposition to go below $18.50, furnace. If that price is out of line for shipment to competitive points, they are not trying to compete with furnaces having lower freight rates. The Valley district market is holding closer to a minimum price of $18, furnace, with several producers asking $18.50. The Cleveland market is unchanged for local delivery at $19, furnace. A Valley producer during the week sold 1400 tons of low phosphorus iron at the regular price of $27.50, furnace. The Hanna Furnace Co. blew out its Cherry Valley furnace at Leetonia, Ohio, this week.

Warehouse Prices, f.o.b. Cleveland

	Base per Lb.
Plates and structural shapes	3.00c.
Mild steel bars	3.00c.
Cold-finished rounds and hexagons	3.90c.
Cold-finished flats and squares	4.40c.
Hoops and bands	3.65c.
No. 28 black sheets	3.50c. to 3.85c.
No. 10 blue annealed sheets	3.15c.
No. 28 galvanized sheets	4.70c. to 5.00c.
No. 9 annealed wire, per 100 lb	$3.00
No. 9 galvanized wire, per 100 lb	3.45
Common wire nails, base, per keg	3.00

Quotations below, except on basic and low phosphorus iron, are delivered Cleveland, and for local iron include a 50c. switching charge. Ohio silvery and Southern iron prices are based on a $3.02 freight rate from Jackson and $6.01 from Birmingham:

Basic, Valley furnace	$17.50
N'th'n No. 2 fdy., sil. 1.75 to 2.25	19.50
Southern fdy., sil. 1.75 to 2.25	$26.51 to 27.01
Malleable	19.50
Ohio silvery, 8 per cent	30.52
Standard low phos., Valley furnace	27.50

Semi-Finished Steel.—Sheet bar specifications have improved, but a considerable portion of the shipments are still on second quarter contracts which were carried over and very little new business is being placed. Prices are unchanged at $36, Cleveland or Youngstown, for sheet bars, and $35 for slabs and large billets.

Bolts, Nuts and Rivets.—The demand for bolts and nuts is lighter than in June, but specifications are holding up fairly well for this season of the year. The industry is operating at about 65 per cent of capacity. While shading of $1 to $2 a ton is reported on large rivets, the leading local producer is holding to the regular price of $2.60.

Sheets.—The improved demand previously reported is still holding up and business is very satisfactory for July from the standpoint of tonnage. However, efforts to get prices on a higher basis have not met with much success. Some of the Ohio mills are naming a Valley instead of a Pittsburgh base, which means a concession of $2 a ton. Black sheets are still selling at 3c., Pittsburgh, although some business is being taken at $2 to $3 a ton higher. Some of the mills are going as low as 2.30c., mill, for blue annealed, and 4.20c., mill, for galvanized, or the equivalent to 2.20c. and 4.15c., Pittsburgh. Automobile body sheets are firm and in good demand, and some of the mills are filled up until September.

Cold-Rolled Strip.—Orders from the automotive industry have been coming out in good volume recently, and some of the mills have several weeks' business on their books. The price is well maintained at 3.60c., Cleveland, except for large lots, which buyers appear to be able to place at a $2 a ton concession.

Reinforcing Bars.—New inquiries include 600 tons for a sales and service station for the Motors Realty Co., Cleveland. Small lots are in good demand. Prices are steady at 1.90c. to 2c., Pittsburgh, for billet steel bars and 1.80c. to 1.90c., mill, for rail steel bars.

Warehouse Business.—Orders out of stock are fair. Regular prices are being well maintained except on galvanized and black sheets, on which some of the mills are making sharp cuts.

Coke.—The demand for foundry coke is light. Prices are unchanged at $4 to $5, ovens, for standard Connellsville coke. Ohio by-product coke is quoted at $7.50, ovens, for July shipment. By-product coke for domestic use is unchanged at $4.50, ovens, for nut and $5 for egg.

Old Material.—The market is somewhat firmer than a week ago, both on heavy melting steel and blast furnace scrap. For the former, $14.50 is now the more common price, and sales have been made at $14.75 and some of the dealers are asking $15. Dealers are paying $11.50 to $11.75 and possibly $12 for borings and turnings, $12 for short turnings, with $12.50 being asked, and $10.50 to $10.75 for machine shop turnings, for shipment to Cleveland consumers. While these

prices are prevailing among dealers, they are not bringing out much material, and no sales have as yet been made to mills at the advances. A Valley district mill has purchased 2000 tons of miscellaneous scrap from a Cleveland dealer, including compressed sheet steel, which brought $15.25.

We quote per gross ton delivered consumers' yards in Cleveland:

Heavy melting steel	$14.25 to $14.75
Rails for rolling	16.25 to 16.50
Rails under 3 ft	17.00 to 17.50
Low phosphorus billet, bloom and slab crops	18.00 to 18.50
Low phosphorus sheet bar crops	18.25 to 18.75
Low phosphorus plate scrap	18.00 to 18.50
Low phosphorus forging crops	16.75 to 17.25
Cast iron borings	11.50 to 11.75
Machine shop turnings	10.50 to 10.75
Mixed borings and short turnings	11.50 to 11.75
Compressed sheet steel	13.00 to 13.25
No. 1 railroad wrought	11.50 to 12.00
No. 2 railroad wrought	13.75 to 14.25
Railroad malleable	18.00 to 18.50
Light bundled sheet stampings	11.25 to 11.75
Steel axle turnings	12.50 to 13.00
No. 1 cast	16.50 to 17.00
No. 1 busheling	11.50 to 12.00
No. 2 busheling	11.25 to 11.75
Drop forge flashings, 15 in. and under	11.50 to 12.00
Railroad grate bars	12.50 to 13.00
Stove plate	11.50 to 12.00
Pipes and flues	10.00 to 10.50

New York

Large Sales Fail to Stiffen Pig Iron Prices—Steel Specifications Heavy

NEW YORK, July 20.—Sales of pig iron by local brokers during the week are estimated at 20,000 to 25,000 tons. Base prices at furnaces vary according to the points of delivery and the competition which must be met. Frequently producers located at widely separated points compete for the same business. Buffalo iron for shipment to this section is reported to have been sold at prices figuring back to close to $18, base furnace, although $18.50 to $19 is more commonly quoted. Orders also have been taken by a western Pennsylvania producer at prices which figure back to low quotations at the furnace. Eastern Pennsylvania iron has been sold in this district at $20.50, base furnace. Competition appears to be most pronounced in New England, where the new Everett furnace and the two eastern New York stacks are pressing for business at the expense of other domestic producers. Foreign iron also continues to be a factor in that section. Notwithstanding the recent buying movement the price situation has failed to strengthen, and it is evident that some producers are still without satisfactory backlogs. The Thatcher Furnace Co., New York, has placed 4000 tons of No. 2 and No. 2X for its Newark and Garwood, N. J., plants, dividing the business among several domestic producers. The A. P. Smith Mfg. Co., East Orange, N. J., has closed for 1000 tons of No. 2 and No. 2X foundry. The American Locomotive Co. has bought 1000 tons of No. 2 and No. 1X for Schenectady, and the Gould Coupler Co., New York, is reported to have placed 1000 tons for Depew, N. Y. The Burnham Boiler Corporation, Irvington, N. Y., has bought 500 tons of foundry for Lancaster, Pa., while the Ingersoll-Rand Co., New York, has placed 1000 tons of high silicon foundry for its Phillipsburg, N. J., plant with a western Pennsylvania furnace, and is understood to have ordered 500 tons additional from an eastern Pennsylvania stack. The General Electric Co. has bought 1000 tons of foundry for Elmira, N. Y., and is still inquiring for 800 tons for that plant. For Bayway, N. J., it closed for 50 tons of Bessemer iron and is still in the market for 150 tons of iron. The largest recent transaction was the sale of 5000 to 10,000 tons of basic iron to the American Tube & Stamping Co. for barge shipment from a New York furnace. The American Bridge Co. is reported to have bought 5000 tons of basic for Pencoyd, Pa. Fresh inquiry for iron is estimated at 5000 tons. The Louis Sacks Iron Foundry, Newark, is in the market for 400 tons of malleable and 500 tons of No. 2X foundry iron for last half, and a northern New York melter is inquiring for 3000 tons, one-half malleable and one-half foundry.

We quote per gross ton delivered in the New York district as follows, having added to furnace prices $2.52 freight from eastern Pennsylvania, $4.91 from Buffalo and $5.54 from Virginia:

East Pa. No. 2 fdy., sil. 1.75 to 2.25	$22.39 to $23.02
East Pa. No. 2X fdy., sil. 2.25 to 2.75	22.89 to 23.52
East Pa. No. 1X fdy., sil. 2.75 to 3.25	23.39 to 24.02
Buffalo fdy., sil. 1.75 to 2.25 (all-rail)	22.91 to 23.91
Buffalo fdy., sil. 1.75 to 2.25 (by barge canal, del'd alongside in lighterage limits, N. Y. and Brooklyn)	20.75 to 21.75
No. 2 Virginia fdy., sil. 1.75 to 2.25	27.54 to 28.04

Ferroalloys.—Practically no interest is shown in ferromanganese, either domestic or foreign. One British seller reports a sale of 10 tons at $110, seaboard. There are occasional inquiries and sales of carload lots.

Warehouse Prices, f.o.b. New York

	Base per Lb.
Plates and structural shapes	3.34c.
Soft steel bars and small shapes	3.24c.
Iron bars	3.24c.
Iron bars, Swedish charcoal	7.00c. to 7.25c.
Cold-finished steel shafting and screw stock—	
Rounds and hexagons	4.00c.
Flats and squares	4.50c.
Cold-rolled strip, soft and quarter hard	6.25c.
Hoops	4.49c.
Bands	3.99c.
Blue annealed sheets (No. 10 gage)	3.89c.
Long terne sheets (No. 28 gage)	6.35c.
Standard tool steel	12.00c.
Wire, black annealed	4.50c.
Wire, galvanized annealed	5.15c.
Tire steel, 1½ x ½ in. and larger	3.30c.
Smooth finish, 1 to 2½ x ¼ in. and larger	3.65c.
Open-hearth spring steel, bases	4.50c. to 7.00c.

	Per Cent Off List
Machine bolts, cut thread	40 and 10
Carriage bolts, cut thread	30 and 10
Coach screws	40 and 10

Boiler Tubes—	Per 100 Ft.
Lap welded steel, 2-in.	$17.33
Seamless steel, 2-in.	20.24
Charcoal iron, 2-in.	25.00
Charcoal iron, 4-in.	67.00

Discounts on Welded Pipe

Standard Steel—	Black	Galv.
½-in. butt	46	29
¾-in. butt	51	37
⅛-in. butt	53	39
2½-6-in. lap	48	35
7 and 8-in. lap	44	17
11 and 12-in. lap	37	12
Wrought Iron—		
½-in. butt	4	+19
¾-in. butt	11	+ 9
1-1½-in. butt	14	+ 6
2-in. lap	5	+14
3-6-in. lap	11	+ 6
7-12-in. lap	3	+16

Tin Plate (14 x 20 in.)

	Prime	Seconds
Coke, 100-lb. base box	$6.45	$6.20
Charcoal, per box—	A	AAA
IC	$9.70	$12.10
IX	12.00	14.25
IXX	13.90	16.00

Terne Plate (14 x 20 in.)

IC—20-lb. coating	$10.00 to $11.00
IC—30-lb. coating	12.00 to 13.00
IC—40-lb. coating	13.75 to 14.25

Sheets, Box Annealed—Black, C. R. One Pass†

	Per Lb.
Nos. 18 to 20	3.95c. to 4.10c.
Nos. 22 and 24	4.00c. to 4.15c.
No. 26	4.05c. to 4.20c.
No. 28*	4.15c. to 4.30c.
No. 30	4.35c. to 4.50c.

Sheets, Galvanized†

	Per Lb.
No. 14	4.25c. to 4.40c.
No. 16	4.40c. to 4.55c.
Nos. 18 and 20	4.55c. to 4.70c.
Nos. 22 and 24	4.70c. to 4.85c.
No. 26	4.85c. to 5.00c.
No. 28*	5.15c. to 5.30c.
No. 30	5.65c. to 5.80c.

*No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.

†Lower price is for lots of 50 bundles of galvanized or 25 bundles of black.

but consumers are evidently well covered by contract. Practically the same situation prevails in the spiegeleisen market, which is devoid of feature.

Warehouse Business.—While there has been a decline in purchasing from stock in the past few weeks, business is reported by most warehouses as better than usual at this season. The present schedule of quotations on black and galvanized sheets is apparently being well maintained with practically no shading. Buying of structural material is confined to small lots but a good volume of business is reported.

Finished Steel.—By comparison with June, the activity in the local steel market is considerably diminished. This, of course, refers to new business, as specifications against third quarter contracts are coming in in fair volume, sufficient at least to cause no revision of the estimates made at the beginning of the month that from the standpoint of steel plant operations this month would excel almost any previous July. It has been the rule lately that specifications are heavier in the latter half of the month than in the first half; hence local sales offices are looking for a better tonnage over the remainder of the month than has been received thus far. The price situation is steady, with no changes. One of the marked developments of the past week or two is a falling off in lettings of structural steel contracts, but the volume of prospective work ahead leads to the expectation that there will be a gain in such tonnage as autumn approaches. An oil company has placed orders for a total of about 5000 tons of 6 and 8-in. line pipe. No other large tonnage awards have been made.

We quote for mill shipments, New York delivery, as follows: Soft steel bars, 2.34c. per lb.; plates, 2.24c.; structural shapes, 2.24c. to 2.34c.; bar iron, 2.24c.

Cast Iron Pipe.—Inquiry for pipe continues light, but several municipal inquiries are reported in preparation. Among the cities mentioned as prospective purchasers of fairly large tonnages are New York and Peekskill, N. Y. Boston, Mass., opened bids last week on about 1000 tons of 48-in. pipe, on which the Warren Foundry & Pipe Co. was the low bidder. Prices continue fairly firm, especially on the smaller sizes.

We quote pressure pipe per net ton, f.o.b. New York in carload lots, as follows: 6-in. and larger, $50.60 to $52.60; 4-in. and 5-in., $55.60 to $57.60; 3-in., $65.60 to $67.60; with $5 additional for Class A and gas pipe.

Coke.—Demand for both furnace and foundry coke in this district continues rather light. A large producer in the Connellsville district, which has been quoting $5.25 per ton for foundry has reduced its price to $5, so that the market today is from $4 to $5 per ton on standard foundry and $3 to $3.25 per ton on furnace. Connellsville foundry is quoted in this district as follows: Delivered Newark and Jersey City, N. J., $7.91 to $8.91; northern New Jersey, $8.03 to $9.03; and New York or Brooklyn, N. Y., $8.79 to $9.79. By-product is quoted at $9.75 to $10.77, delivered Newark or Jersey City, N. J.

Old Material.—Stimulated by broker buying, the tendency of most grades is upward with consumers still showing no inclination to close contracts on a higher price level. No. 1 heavy melting steel is being purchased at $14.50 to $16 per ton, delivered eastern Pennsylvania. Some steel company consumers are pressing brokers for deliveries on contracts and are apparently not overstocked with supplies of heavy melting grade. One large consumer in eastern Pennsylvania, however, is evidently well supplied with heavy melting steel and still receiving sufficient shipments on its present contracts. Specification pipe shows a slight advance with brokers paying up to $15 per ton, delivered to a Lebanon, Pa., consumer. Borings and turnings are active with 20,000 tons reported purchased for delivery to Bethlehem, Pa., and Sparrows Point, Md., at $13.50 per ton, Sparrows Point, and $13 per ton, Bethlehem. Purchases of material on recent railroad lists have brought higher prices than the market level. Bids were opened by the Government July 19 on about 1700 tons of shell steel at New Jersey arsenals, including Raritan and Port Newark.

Buying prices per gross ton, New York, follow:

Heavy melting steel (yard)	$10.00 to $10.50
Heavy melting steel (railroad or equivalent)	11.75 to 12.25
Rails for rolling	12.75
Steel car axles	19.00 to 19.50
Iron car axles	22.00 to 22.50
No. 1 railroad wrought	13.75 to 14.25
Forge fire	10.00 to 10.50
No. 1 yard wrought, long	12.75 to 13.25
Cast borings (steel mill)	9.75 to 10.00
Cast borings (chemical)	12.50 to 13.00
Machine shop turnings	9.75 to 10.25
Mixed borings and turnings	9.25 to 10.25
Iron and steel pipe (1 in. diam., not under 2 ft. long)	10.75 to 11.25
Stove plate (steel mill)	9.75 to 10.25
Stove plate (foundry)	11.00
Locomotive grate bars	11.00 to 11.50
Malleable cast (railroad)	16.00 to 16.50
Cast iron car wheels	12.75 to 13.25
No. 1 heavy breakable cast	12.25 to 14.00

Prices which dealers in New York and Brooklyn are quoting to local foundries per gross ton follow:

No. 1 machinery cast	$16.50 to $17.00
No. 1 heavy cast (columns, building material, etc.), cupola size	15.00 to 15.50
No. 2 cast (radiators, cast boilers, etc.)	14.00 to 14.50

Philadelphia

Mid-Summer Steel Buying in Fair Volume —Scrap Stronger—Pig Iron Weaker

PHILADELPHIA, July 20.—Steel sales in this district for the month will show a falling off as compared with those of June, but the total tonnage will surpass that of July last year and will be generally better than is expected in mid-summer. The largest orders of the week were those of the Pennsylvania Railroad, said to total about 30,000 tons of plates, shapes, bars and other products, on which open bids were received a few weeks ago. The Chesapeake & Ohio Railroad is inquiring for about 5000 tons of plates, shapes and bars for 500 cars, on which bids have been invited. Following a precedent established some time ago, this railroad may furnish the car builders with the steel. The Concrete Steel Co. will supply 8000 tons of twisted reinforcing bars for a viaduct to be built jointly by the city of Philadelphia and the Pennsylvania Railroad.

With pig iron showing some slight signs of weakness, the scrap market is taking a turn for the better, and although no mill purchases of importance are reported, dealers have paid as high as $16 on orders for steel scrap taken some time ago at $15.50. On competitive business eastern Pennsylvania furnaces have gone as low as $20.50, furnace, on the base grade of foundry iron.

Ferromanganese.—Carload-lot sales of ferromanganese have been made at $95, furnace, but on larger lots quotations of $88 to $90 are still open.

Billets.—With only occasional sales of small lots, the billet market is not being seriously tested, but it is doubtful if mills would be willing to shade current quotations as they need for their own use most of the semi-finished steel they are producing. For open-hearth rerolling billets the quotation is $35, Pittsburgh, with an extra of $5 for forging billets of ordinary quality.

Pig Iron.—Although eastern Pennsylvania furnaces have substantial backlogs, a disposition to meet the competition of furnaces in New York State has appeared again in the last week, resulting in sales which did not net the furnace more than $20.50 for the base grade of foundry iron. The Thatcher Co., New York, bought 4000 tons, about half from Buffalo and half from an eastern Pennsylvania furnace, at about this level. On sales within the immediate Philadelphia district the furnaces have held to a $21 base price, but elsewhere there has been equalization of freight rates, bringing the net price at furnace down to $20.50 to $20.75. A sale of 2000 tons of basic was made at a delivered price of $21.89, equal to $20.50 at furnace. Another sale of 5000 tons of basic is reported, but not verified at this writing. A plate manu-

facturer is expected to close shortly for 10,000 tons of basic. Business in the last week has been in small volume, consisting mostly of small lots of foundry iron for early shipment. Most consumers are well covered for third quarter and some for the remainder of the year.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rates varying from 76c. to $1.63 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	$21.76 to $22.26
East. Pa. No. 2X, 2.25 to 2.75 sil.	22.26 to 22.76
East. Pa. No. 1X	22.76 to 23.26
Virginia No. 2 plain, 1.75 to 2.25 sil.	27.67 to 28.67
Virginia No. 2X, 2.25 to 2.75 sil.	28.17 to 29.17
Basic delivered eastern Pa.	21.00 to 21.25
Gray forge	21.50 to 22.00
Malleable	22.00 to 22.50
Standard low phos. (f.o.b. furnace)	22.00 to 23.00
Copper bearing low phos. (f.o.b. furnace)	23.50 to 24.00

Plates.—There has been a slight reduction in the operating rate at some of the Eastern plate mills. The volume of buying slumped in the first two weeks of the month, but has picked up somewhat in the last week. The mills have adjusted their schedules to conform to expectations of a reduced volume during the summer and are running at about 50 to 60 per cent on the average. Quotations are uniformly on the basis of 1.90c., Pittsburgh.

Structural Shapes.—Considering the large volume of structural steel tonnage placed with the mills in June, it is not surprising that orders this month have dropped off. Fabricators covered their requirements on all prospective work, and very little has been contracted for this month. Some of the fabricating shops are so heavily filled up that they cannot make sufficiently good deliveries to compete on pending building construction. On new business the mills are quoting from 1.90c. to 2c., Pittsburgh, the majority naming the higher price.

Bars.—The largest award of reinforcing bars in this district in a long time consists of 8000 tons for a viaduct to be built by the city and the Pennsylvania Railroad. Competition for the tonnage was narrowed by the fact that the bars had to be twisted. Merchant bars are in fair demand, although the amount of tonnage placed on mill books at 1.90c., Pittsburgh, prior to the advance to 2c., was sufficient to fulfill the requirements of many users throughout July and in some cases through August also. Bar iron makers continue to quote 2.22c., Philadelphia.

Sheets.—Somewhat quieter conditions prevail in the sheet market, though sales are better than had been expected this month. Prices are steadier. On blue annealed and galvanized they are now fairly well maintained at 2.30c. and 4.30c., respectively, while on black sheets the range is from 3c. to 3.10c., Pittsburgh, with an increasing number of sales at around 3.10c.

Warehouse Prices, f.o.b. Philadelphia

	Base per Lb.
Tank steel plates, ¾-in. and heavier	2.80c. to 3.00c.
Tank steel plates, ¼-in.	3.00c.
Structural shapes	2.75c. to 2.90c.
Soft steel bars, small shapes and iron bars (except bands)	3.00c.
Round-edge iron	3.50c.
Round-edge steel, iron finished, 1½ x 1½ in.	3.50c.
Round-edge steel, planished	4.30c.
Reinforcing steel bars, square, twisted and deformed	3.00c.
Cold-finished steel, rounds and hexagons	4.00c.
Cold-finished steel, squares and flats	4.50c.
Steel hoops	4.00c. to 4.25c.
Steel bands, No. 12 gage to ¼-in., inclusive	3.75c. to 3.90c.
Spring steel	5.00c.
No. 28 black sheets	4.35c.
No. 10 blue annealed sheets	3.40c.
No. 28 galvanized sheets	5.55c.
Diamond pattern floor plates—	
¼-in.	5.30c.
⅜-in.	5.50c.
Rails	3.20c.
Tool steel	8.50c.
Swedish iron bars	6.00c. to 6.50c.

Imports.—Some pig iron importers are making no more purchases abroad because of their inability to make a profit in competition with lower prices on domestic iron; nevertheless imports on old commitments continue to come in at a fairly high rate, last week's receipts at Philadelphia being 9332 tons. Of this 5140 tons came from England, 1242 tons from India, 2350 tons from Germany and 600 tons from the Netherlands. Other imports were as follows: Chrome ore from Portuguese Africa, 4555 tons; galvanized steel strips from England, 21 tons; steel bars from Germany, 43 tons; steel bars from Sweden, 104 tons; structural steel from Belgium, 106 tons.

Old Material.—In what is altogether a dealers' market there have been one or two unusual happenings in the last week. Brokers with partially unfilled orders for heavy melting steel, having been pressed by mills for deliveries, have bid up prices. They have paid as high as $16, delivered, for heavy melting steel on orders taken weeks ago at $15.50. Likewise on blast furnace borings and turnings a broker has paid $13.25 to fill a $13 order. Such a situation is, of course, bound to have an effect on the prices which consumers will be obliged to pay, but for the present Eastern mills are very little interested in buying steel, although one or two are running so low on stocks, according to reports, that they will be forced into the market soon. One mill willing to pay $15.50 has not been able to buy steel scrap at this figure and has been quoted prices ranging from $16 to $17. This fact is of importance as showing the views of brokers and dealers as to the probable course of prices during the next few weeks. The largest Eastern consumer of heavy melting steel has not paid higher than $14.50, so the market range this week shows an unusually wide spread—from $14.50 to $16. For a large tonnage of blast furnace borings and turnings a steel company paid $13.50, delivered. Other grades are not particularly affected by the slight show of strength in the market, though couplers and knuckles and rolled steel wheels are 50c. a ton higher.

We quote for delivery, consuming points in this district, as follows:

No. 1 heavy melting steel	$14.50 to $16.00
Scrap rails	14.50 to 16.00
Steel rails for rolling	15.50 to 16.00
No. 1 low phos., heavy, 0.04 per cent and under	19.00 to 20.00
Couplers and knuckles	17.50 to 18.00
Rolled steel wheels	17.50 to 18.00
Cast iron car wheels	17.00 to 17.50
No. 1 railroad wrought	16.50 to 17.00
No. 1 yard wrought	16.00 to 16.50
No. 1 forge fire	13.50 to 14.00
Bundled sheets (for steel works)	13.50
Mixed borings and turnings (for blast furnace)	12.50 to 13.50
Machine shop turnings (for steel works)	13.50
Machine shop turnings (for rolling mills)	13.50 to 14.00
Heavy axle turnings (or equivalent)	14.00 to 14.50
Cast borings (for steel works and rolling mill)	13.50 to 14.00
Cast borings (for chemical plant)	15.00 to 15.50
No. 1 cast	17.00 to 18.00
Heavy breakable cast (for steel works)	16.50
Railroad grate bars	14.00
Stove plate (for steel works)	14.00
Wrought iron and soft steel pipes and tubes (new specifications)	14.50 to 15.00
Shafting	20.00 to 21.00
Steel axles	22.00 to 22.50

A dutiable value of consignments of radial ball bearings imported from Germany, between Sept. 14, 1922, and June 2, 1923, when German domestic demand for such goods was dead, due to currency instability, was determined to be the "export value" by decision just rendered by the Court of Customs Appeals, which affirmed a decision of the Board of General Appraisers.

Electric hoists ordered in June were 31.2 per cent more in number and 21 per cent greater in value than in May, according to records of E. Donald Tolles, 165 Broadway, New York, secretary-treasurer Electric Hoist Manufacturers Association. Shipments in June were 14.3 per cent under those of May.

San Francisco

Larger Demand for German Coke—Steel Inquiry Lags with Prices Steady

SAN FRANCISCO, July 17 (*By Air Mail*).—Fresh inquiry for German coke during the week is understood to have caused several local users to increase the orders they previously had placed with importers who have shipments en route. Compared with the small amount of buying in iron and steel, business in coke is fairly substantial. While July so far has developed neither stronger buying nor larger inquiry in the principal finished steel products, it has brought a firmer tone to prices in most departments of the market. Practically all of the Eastern mills now are quoting plates at 2.30c., c.i.f. Coast ports, and shapes at 2.35c., whereas one month ago quotations of $1 a ton less on each were not uncommon. Also, pig iron, coke and reinforcing bars are firmer, and warehouse prices are steadier.

Fresh inquiries for steel have been somewhat more numerous than was the case a week ago, but individually most of them are small. No settlement has been effected in the local carpenters' strike, which started April 1, and as a result building operations have fallen off noticeably.

Pig Iron.—A local importer has received a shipment of 400 tons of Indian foundry iron, half of which will be unloaded in the Los Angeles district. No inquiries of importance are known to be pending. Sales mostly are for small lots. Prices are slightly firmer but unchanged.

*Utah basic	$26.00 to $27.00
*Utah foundry, sil. 2.75 to 3.25	26.00 to 27.00
**English foundry, sil. 2.75 to 3.25.	25.00
**Indian foundry, sil. 2.75 to 3.25	25.00
**German foundry, sil. 2.75 to 3.25.	23.00 to 23.50
**Dutch foundry, sil. 2.75 to 3.25	22.50
**Belgium foundry, sil. 2.75 to 3.25.	22.00

*Delivered San Francisco.
**Duty paid, f.o.b. cars San Francisco.

Shapes.—While contracts for fabricated structural steel known to have been closed this week total only 655 tons, bids have been submitted on several jobs which will require a substantial tonnage. Fresh inquiries for projects of 100 tons and over call for a total of about 600 tons. Most of the Eastern mills now are quoting plain material at 2.35c., c.i.f. Coast ports.

Plates.—Lettings total about 400 tons, including 300 tons which the Southern Pacific Co., San Francisco, placed with an Eastern mill. The largest individual inquiry of the week calls for 200 tons. Although bids have been closed for some time on 1450 tons required by the Lemon Grove and Spring Valley Irrigation District, La Mesa, Cal., no action has been taken. Nothing below 2.30c., c.i.f. Coast ports, is known to have been named recently by any of the Eastern mills.

Bars.—Awards of reinforcing bars in this district are the heaviest reported in a single week for several months, amounting to 1216 tons. Several good-sized tonnages recently have come up for figures both here and in southern California. The largest individual letting of the past week, 600 tons, for the Palo Alto Hospital, was taken by a San Francisco jobber through his Los Angeles office. Local concrete bar jobbers continue to quote as follows: 2.80c., base, per lb. on lots of 250 tons; 2.95c., base, per lb. on carload lots, and 3.20c., base, on less than carload lots.

Cast Iron Pipe.—Rio Vista and Fairfield, Cal., have placed 100 and 240 tons, respectively, with the United States Cast Iron Pipe & Foundry Co. Sacramento and Santa Ana, Cal., are taking bids on 318 and 798 tons, respectively, and Laguna Beach, Cal., will close bids Aug. 3 on 1083 tons of 16, 18 and 24-in. Class B pipe. One of the chief reasons cited for the falling off in sales in the San Francisco Bay territory this year is that the two principal buyers—a local and an East Bay water company—are expected to be taken over in the near future, one by San Francisco and the other by the East Bay Municipal Utility District, Oakland, Cal. Consequently neither water company is buying to the extent it would ordinarily.

Steel Pipe.—The Grinnell Co. of the Pacific is low bidder on 395 tons of 8-in. Matheson joint pipe required by the city of Los Angeles under Specification 795-E. The Pacific Fruit Express Co., San Francisco, has bought against its recent inquiry for 175 tons of 1-in. to 6-in. special coated standard pipe from an unnamed firm. The Vista Irrigation District, Vista, Cal., has awarded 108 tons of 4, 5 and 6-in. Matheson joint pipe to the Crane Co. The city of Seattle, Wash., has placed a contract for eight miles of 4, 6 and 8-in. pipe for Water District No. 20. The tonnage has not been announced.

Warehouse Business.—Out-of-stock prices on spring steel, sheets and wire nails are slightly stronger. Orders so far this month have been more numerous but, individually, they are small. No large volume of buying is expected until after the vacation period.

Coke.—Orders are more numerous, and buyers are said to be specifying larger quantities. Practically all of the coke being purchased now on the Pacific Coast will be supplied by Germany, because of the impossibility of getting supplies from England on account of the British coal strike. Two local importers have shipments en route from Germany and are quoting by-product fuel at about $12 to $12.50 per net ton at incoming dock.

Old Material.—Little buying is being done. No. 1 heavy melting steel is being offered at $10 to $10.50 per gross ton, delivered to consumers' yards.

Warehouse Prices, f.o.b. San Francisco

	Base per Lb.
Plates and structural shapes	3.30c.
Mild steel bars and small angles	3.30c.
Small channels and tees, ¾-in. to 2¾-in.	3.90c.
Spring steel, ⅝-in. and thicker	7.00c
No. 28 black sheets	4.90c.
No. 10 blue annealed sheets	3.90c.
No. 28 galvanized sheets	6.00c.
Common wire nails, base per keg	$3.75
Cement coated nails, base per keg	3.00

St. Louis

Pig Iron Buying Tapers Off—Scrap Prices Continue to Advance

ST. LOUIS, July 20.—The buying movement in pig iron, which has featured this market for the past several weeks, is gradually spending itself. Some few melters who had failed to fill their requirements earlier are placing orders, but they are mainly the smaller interests. The only transaction of any size reported was a sale of 5000 tons of basic iron to a Peoria melter for delivery through the balance of the year. A Quincy specialty maker bought 500 tons, and a similar amount was purchased by a Springfield, Ill., jobbing foundry. The St. Louis Coke & Iron Corporation reported sales of small lots aggregating 1000 tons. Prices have failed to stiffen despite the recent heavy sales. As low as $20, base furnace, has been done on Chicago iron in this district, though the common quotation on Northern iron is $21, Chicago. Melt holds up well, and sellers report no decline in shipments.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices, $2.16 freight from Chicago, $4.42 from Birmingham, all rail, and 81c. average switching charge from Granite City:

Northern fdy., sil. 1.75 to 2.25	$22.66 to $23.16
Northern malleable, sil. 1.75 to 2.25	22.66 to 23.16
Basic	23.16 to 24.16
Southern fdy., sil. 1.75 to 2.25	24.42 to 25.42
Granite City iron, sil. 1.75 to 2.25	22.81 to 23.31

Coke.—Aside from the purchase of 5000 tons of foundry coke by a Southwestern melter for delivery through the next 10 months, no sale of size has been reported. There is still a fair volume of contracting by the smaller users, and prices for both foundry and furnace coke hold firm. Demand for domestic coke has picked up somewhat since the second week in July, but ordering by householders and dealers is still backward. Local by-product plants are operating at capacity, and reserve stocks are steadily increasing.

Warehouse Prices, f.o.b. St. Louis

	Base per Lb.
Plates and structural shapes	3.25c.
Bars, mild steel or iron	3.15c.
Cold-finished rounds, shafting and screw stock	3.75c.
No. 28 black sheets	4.60c.
No. 10 blue annealed sheets	3.60c.
No. 28 galvanized sheets	5.70c.
Black corrugated sheets	4.65c.
Galvanized corrugated sheets	5.75c.
Structural rivets	3.65c.
Boiler rivets	3.85c.
	Per Cent Off List
Tank rivets, ⅞-in. and smaller	70
Machine bolts	50 and 5
Carriage bolts	47½
Lag screws	55 and 5
Hot-pressed nuts, square, blank or tapped	3.25c. off per lb.
Hot-pressed nuts, hexagons, blank or tapped	3.75c. off per lb.

Finished Iron and Steel.—Railroad shops are placing fair orders for fill-in material, and the general demand for iron and steel goods out of warehouse has picked up during the past few days. The demand for building materials continues slow. The Illinois Highway Commission received bids last week on reinforcing concrete bars for scattered work, requiring a total of about 750 tons. The cement and quarrying industries are still taking considerable steel, and shipments of oil field goods are holding at the recent high levels.

Old Material.—The market continues strong and feverish. Dealers with orders to fill are finding difficulty in getting the material they want, and quotations on certain items are steadily advancing. Upward revisions during the week have extended to all sections of the list and range from 50c. to $1.50 per ton. Consuming industries are taking more interest in material, and several mills having purchased sizable tonnages. Preoccupation of farmers with harvesting, the high freight rates and market prices are factors in holding back country scrap, which is very scarce, particularly in the stove plate and agricultural cast grades. Railroad offerings are bringing high prices. Lists before the trade include the following: Missouri Pacific, 500 tons; Wabash, 500 tons; Rock Island, 6500 tons; Chicago & Alton, 1400 tons and Big Four, two cars of second hand machinery.

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

	Per Gross Ton	
Iron rails	$12.00 to	$12.50
Rails for rolling	16.50 to	17.00
Steel rails less than 3 ft.	16.25 to	16.75
Relaying rails, 60 lb. and under	20.50 to	23.50
Relaying rails, 70 lb. and over	26.50 to	29.00
Cast iron car wheels	16.00 to	16.50
Heavy melting steel	13.50 to	14.00
Heavy shoveling steel	13.50 to	14.00
Frogs, switches and guards cut apart	15.50 to	16.00
Railroad springs	17.50 to	18.00
Heavy axle and tire turnings	11.00 to	11.50
No. 1 locomotive tires	16.00 to	16.50
	Per Net Ton	
Steel angle bars	13.75 to	14.25
Steel car axles	19.75 to	20.25
Iron car axles	21.50 to	22.00
Wrought iron bars and transoms	19.00 to	19.50
No. 1 railroad wrought	11.75 to	12.25
No. 2 railroad wrought	12.00 to	12.50
Cast iron borings	9.75 to	10.25
No. 1 busheling	11.00 to	11.50
No. 1 railroad cast	14.75 to	15.25
No. 1 machinery cast	17.00 to	17.50
Railroad malleable	13.50 to	14.00
Machine shop turnings	6.25 to	7.75
Bundled sheets	6.75 to	7.25

Reading Iron Co. Buys McConway & Torley Rolling Mills

The McConway & Torley Co., Pittsburgh, has sold its rolling mills to the Reading Iron Co., through F. B. Foster, Oliver Building, Pittsburgh, the sale including the buildings, mills and all equipment. The buildings are to be taken down and shipped to Reading for re-erection to house the mills, which consist of a 16-in. breakdown mill and a five stand 12-in. merchant mill equipped with Falk gears and driven by two Westinghouse motors, one of 1200 hp. and the other of 800 hp. The plant was built five years ago, and has been operated only a few times since and then for brief periods.

Birmingham

Pig Iron Demand Balances Output—Steel Shipments Are Heavy

BIRMINGHAM, July 20.—Foundry pig iron sales are in fair volume, and indications are that specifications will balance production for the quarter. One of the smaller producers has practically withdrawn from the market. Some of the larger melters have been placing orders, but they will require still more iron for the quarter. Pressure for deliveries has increased as the result of heavier specifications from a number of the smaller melters, among them stove foundries, and shipments at the moment exceed production. While a number of inquiries for fourth quarter have been reported, few sales for that period have been made. The larger local consumers are operating their shops at capacity, and there are no present signs of a recession in melt in coming months. No. 2 foundry iron is steady at $21, Birmingham.

We quote per gross ton, f.o.b. Birmingham district furnaces, as follows:

No. 2 foundry, 1.75 to 2.25 sil	$21.00
No. 1 foundry, 2.25 to 2.75 sil	21.50
Basic	21.00
Charcoal, warm blast	30.00

Rolled Steel.—Mills and fabricating plants are maintaining operations at a steady gait. Fluctuations in steel output are due mainly to variations in the supply of ingots or billets. The Tennessee Coal, Iron & Railroad Co. and the American Steel & Wire Co. plants are making heavy shipments. In the meantime work is being pushed on two blast furnaces and four new open-hearth furnaces. The Gulf States Steel Co. has a sufficient stock of billets to keep its finishing mills running while repairs are being made to a blast furnace and its open-hearth furnaces. The stack will be down for four weeks and the open-hearth furnaces for two weeks. The smaller fabricating shops are operating at capacity, with considerable new business in prospect. Reinforcing bars are in strong demand. Soft steel bars and structural shapes are quoted at 2.15c. to 2.25c. per lb., base Birmingham, and plates at 2.05c. to 2.15c.

Coke.—The operations of by-product coke ovens in this State are well maintained, and independent operators are accumulating no stock. Foundry coke ranges from $5.50 to $6 per net ton, Birmingham, with the higher price applying on spot tonnages and smaller contracts.

Cast Iron Pipe.—Generous backlogs, together with an encouraging amount of new business, are sustaining active operations at all of the pressure pipe shops. Many of the soil pipe and fittings manufacturers are also busy. Shipments of pressure pipe are equal to output; hence no stocks are being accumulated. Pressure pipe continues to be quoted at $40, base Birmingham, for 6-in. and larger diameters.

Old Material.—Demand shows little improvement. No new business has been booked in heavy melting steel, and while prices are unchanged that grade is weak. Sales have been confined to small quantities of No. 1 cast and a few other grades. Stocks in dealers' yards are large.

We quote per gross ton, f.o.b. Birmingham district yards, as follows:

Cast iron borings, chemical	$15.00 to	$16.00
Heavy melting steel	12.00 to	13.00
Railroad wrought	12.00 to	13.00
Steel axles	17.00 to	18.00
Iron axles	17.00 to	18.00
Steel rails	13.00 to	14.00
No. 1 cast	16.50 to	17.00
Tramcar wheels	16.00 to	17.00
Car wheels	16.00 to	16.50
Stove plate	14.00 to	14.50
Machine shop turnings	7.50 to	8.00
Cast iron borings	7.50 to	8.00
Rails for rolling	15.00 to	16.00

Union scale of wages and hours of labor as of May 15, 1925, are covered in a 62-page pamphlet prepared by William J. Maguire and just issued by the Pennsylvania Department of Labor and Industry, Harrisburg. This deals with a large variety of occupations and compares the figures with those prevailing one year before.

Cincinnati

Sheet Prices Steadier—Northern Alabama Stacks Quote $20.50, Furnace

CINCINNATI, July 20.—Sales of pig iron during the past week were mostly in small lots, but the aggregate was of about the same volume as the week previous, or around 8000 tons. This included fair lots of Northern as well as high silicon iron, and a steady business in Valley iron. Little or no change in prices was noted anywhere along the line. Southern Ohio district producers are holding prices firm at $19.50, base furnace, and would take any quantity for immediate delivery at that figure. Deferred deliveries are not much sought. Ironton furnaces have not been turning down any business at $19.50, base, but are not pressing sales very urgently. Consumers have been given to understand that there will be no price shading. Inquiry is light. Northern Alabama furnaces are understood to be quoting $20.50, base furnace, in competition with Tennessee iron. The Rockwood furnace in Tennessee is still out of the market, its output being sold. Birmingham producers have not cut prices to meet the Northern Alabama reduction and are still quoting $21, base Birmingham. Jackson County silvery iron has been more active, with quotations unchanged. The only inquiry of any magnitude the past week was one from a Northern Indiana consumer for 3000 to 5000 tons of malleable. Purchases during the week ranged largely from 100 to 200 tons, with a few calling for 300 to 500 tons. A Southern Ohio melter purchased 300 tons of Northern foundry, and small lots of Southern iron were bought. There is some talk in the trade of the effect of the German competition, but thus far it is said that no melters here have been dickering for foreign iron.

Based on freight rates of $3.69 from Birmingham and $1.89 from Ironton, we quote f.o.b. Cincinnati:

Alabama fdy., sil. 1.75 to 2.25 (base)	$24.19 to $24.69
Alabama fdy., sil. 2.25 to 2.75	24.69 to 25.19
Tennessee fdy., sil. 1.75 to 2.25	24.69
Southern Ohio silvery, 8 per cent	30.39
So. Ohio fdy., sil. 1.75 to 2.25	21.39
So. Ohio malleable	20.39 to 21.89

Finished Material.—Though there is some falling off in business, following the heavy specifying in June, bookings during the week were encouraging. Sales were larger than in the same week in July, 1925, and the market has not lost its firmness. Moreover, there is talk of a further advance of $2 per ton on steel bars, and it is generally reported that several of the larger makers are refusing to make contracts for third quarter requirements but are limiting commitments to July and August deliveries. This is interpreted as indicating that unfilled orders have not been reduced materially. Locally prices on bars, shapes and tank plates appear steady, and it is said that sales resistance has been so broken down that there is no longer hope of concessions from the recent $2 advance on bars. In fact, consumers are doing more forward buying than usual, indicating confidence in the market. In black, galvanized and blue annealed sheets the market is also steadier. Prices are up 10c. to 15c. per 100 lb. Black sheets are held at 3.15c., base Pittsburgh; galvanized at 4.30c., and blue annealed at 2.30c. to 2.40c. The demand for tank plates has been more active at 1.90c., base Pittsburgh. Structural shapes are unchanged at 2c., base Pittsburgh. Fabricators of gas holders report sufficient work booked to keep them operating at capacity for the next two months. In the structural line the most important job awarded was that of the Delco Light Co., Dayton, Ohio. The award made calls for 3500 tons of structural steel, which was placed with the McClintic-Marshall Co. Other lettings were largely of a miscellaneous character, in lots of 25 to 75 tons and less. Automobile body sheets have been quiet this week, but some good orders are anticipated in the next few weeks. Wire goods are fairly active, but sales have been mostly in odd lots for immediate delivery. Common wire nails are firm at $2.65 per keg, Ironton or Pittsburgh, and plain wire at $2.50 per 100 lb., Ironton or Pittsburgh. Wire dealers are watching the hay-tie situation closely. Indications point to a large hay crop through this entire territory, and it is expected that there will be a heavy consumption of hay wire and ties. Buyers are holding off for the time, waiting to see the completion of the crop, and dealers have not been apprised of the estimates of amounts needed.

Reinforcing Bars.—Contracts for concrete bars awarded to the Pollak Steel Co. include St. Mary's Convent, Covington, Ky., 160 tons, and the Chevrolet Motor Co. plant at Norwood, Ohio, 140 tons. Sales were made on basis of $1.90 per 100 lb., base Marion, Ohio. Considerable tonnage for a plant of the Delco Light Co. at Moraine City, Ohio, near Dayton, is expected to be let this week. New billet cars are bringing 2c., Cleveland, and rail steel bars, 1.90c., base mill.

Warehouse Business.—July sales from warehouse have been satisfactory and practically up to the June average.

Coke.—Increased interest has been noted in domestic sizes, and the movement of foundry coke is somewhat better. Moreover, heating coke is beginning to move about two months earlier than usual. Stocks are low, and good orders are expected when consumers complete their inventories. A difference of about 50c. a ton is being made by Michigan coke makers between chestnut and larger sizes. For outside delivery domestic by-product coke in chestnut size is quoted at $7.50, Detroit ovens, and for egg and nut grades at $7.75. For local shipment, egg and nut coke are quoted at $8, Detroit ovens. By-product foundry in Michigan is unchanged at $9.50, Detroit ovens, for outside shipment. Sales of by-product and beehive coke last week aggregated a fair tonnage, consisting mostly of odd-lot orders.

Based on freight rates of $2.14 from Ashland, Ky., $3.53 from Connellsville, and $2.59 from Wise County ovens and New River ovens, we quote f.o.b. Cincinnati: Connellsville foundry, $7.53 to $9.53; Wise County foundry, $7.09; New River foundry, $9.59 to $10.09; by-product foundry, $9.64 to $10.14.

Old Material.—Mills are buying only small quantities of old material, mostly on contract. Prices are fairly steady, but sales are slow, the summer dullness having affected transactions. Values are unchanged, though it is intimated that sellers would not turn down orders on a slight shading, just as a means of stimulating business.

We quote dealers' buying prices, f.o.b. cars, Cincinnati:

Per Gross Ton	
Heavy melting steel	$12.50 to $13.00
Scrap rails for melting	12.50 to 13.00
Short rails	17.50 to 18.00
Relaying rails	27.00 to 27.50
Rails for rolling	14.00 to 14.50
Old car wheels	13.00 to 13.50
No. 1 locomotive tires	17.00 to 17.50
Railroad malleable	15.50 to 16.00
Agricultural malleable	14.50 to 15.00
Loose sheet clippings	7.00 to 7.50
Champion bundled sheets	9.00 to 9.50
Per Net Ton	
Cast iron borings	7.00 to 7.50
Machine shop turnings	6.50 to 7.00
No. 1 machinery cast	17.00 to 18.00
No. 1 railroad cast	14.50 to 15.00
Iron axles	20.00 to 20.50
No. 1 railroad wrought	9.00 to 9.50
Pipes and flues	8.00 to 8.50
No. 1 busheling	9.50 to 10.00
Mixed busheling	7.00 to 7.50
Burnt cast	7.50 to 8.00
Stove plate	9.00 to 9.50
Brake shoes	9.50 to 10.00

Warehouse Prices, f.o.b. Cincinnati

	Base per Lb.
Plates and structural shapes	3.40c.
Bars, mild steel or iron	3.20c. to 3.30c.
Reinforcing bars	3.20c. to 3.30c.
Hoops	4.00c. to 4.25c.
Bands	3.95c.
Cold-finished rounds and hexagons	3.85c.
Squares	4.35c.
Open-hearth spring steel	4.75c. to 5.00c.
No. 28 black sheets	4.10c. to 4.30c.
No. 10 blue annealed sheets	3.60c.
No. 28 galvanized sheets	5.25c. to 5.40c.
Structural rivets	3.75c.
Small rivets	65 per cent off list
No. 9 annealed wire, per 100 lb.	$3.00
Common wire nails, base per keg	2.95
Cement coated nails, base per 100-lb. keg	3.15
Chain, per 100 lb	7.55
	Net per 100 Ft.
Lap welded steel boiler tubes, 2-in.	$18.00
4-in.	38.00
Seamless steel boiler tubes, 2-in.	19.00
4-in.	39.00

Buffalo

Demand for Pig Iron Improves—Steel Buying by Canadian Implement Trade

BUFFALO, July 20.—Inquiries and sales show improvement. A foundry and malleable inquiry from this district calls for 3000 tons, and there are a few other inquiries for 1000 tons of the same grades. The General Electric Co. wants 1000 tons of foundry. A report that the New York Air Brake Co. placed a recent order at $17.85, Buffalo furnace, is generally denied, though this price may have been obtained from a furnace close to Buffalo. The price of $20, Buffalo, for business in this district shows no sign of weakening, and one interest announces that its sales policy is to go no lower than $19 on any shipments to the East.

We quote prices per gross ton, f.o.b. Buffalo, as follows:

No. 2 plain fdy., sil. 1.75 to 2.25	$19.00 to $20.00
No. 2X foundry, sil. 2.25 to 2.75	19.50 to 20.50
No. 1X foundry, sil. 2.75 to 3.25	20.50 to 21.50
Malleable, sil. up to 2.25	20.00
Basic	19.00
Lake Superior charcoal	29.28

Finished Iron and Steel.—Bars are firm at 2.265c., Buffalo, with the market showing considerable stability. Sheet business shows some improvement, with specifications very good and exceptionally heavy since July 1. A local mill reports that its price for black is 3.10c., base Pittsburgh, with no shading. Some black sheets, however, have been sold at 3c. Pipe business is very good, particularly in line pipe and oil country goods, with deliveries very slow on oil pipe. There is considerable drilling and good operation throughout the fields adjacent to this district. Galvanized sheets are fluctuating between 4.10c. and 4.20c., base Pittsburgh. A local maker has taken 100 tons of reinforcing bars for an office building for the Utica Gas & Electric Co., Utica, N. Y. Canadian business has improved, with the agricultural machinery trade striking a good stride. Implement makers are now doing four times as much business as this time last year.

Old Material.—The latter part of the week dealers made an active market in heavy melting steel and hydraulic compressed sheets, buying against an order they believed about to be placed. This failed to materialize, however, and some of the purchasers find that they have paid $16.50 to $16.75 for heavy melting steel they cannot dispose of. The only present activity is in No. 1 cast and stove plate, for both of which there is strong demand. The price of stove plate has strengthened to $15.50, and it is scarce. One mill here which uses considerable heavy melting steel continues to offer $14.50 for the grade it handles.

We quote prices per gross ton, f.o.b. Buffalo, as follows:

Heavy melting steel	$14.50 to $14.75
Selected No. 1 heavy melting steel	16.00 to 16.50
Low phosphorus	17.50 to 18.00
No. 1 railroad wrought	14.00 to 14.50
Car wheels	17.00 to 17.50
Machine shop turnings	9.50 to 10.00
Mixed borings and turnings	11.50 to 12.00
Cast iron borings	11.50 to 12.00
No. 1 busheling	15.00 to 15.50
Stove plate	15.25 to 15.50
Grate bars	13.00 to 13.50
Hand-bundled sheets	10.00 to 10.50
Hydraulic compressed	15.00 to 15.50
No. 1 machinery cast	16.00 to 16.25
Railroad malleable	16.50 to 17.00
Iron axles	24.00 to 25.00
Steel axles	16.00 to 16.50
Drop forge flashings	12.75 to 13.25

Warehouse Prices, f.o.b. Buffalo

	Base per Lb.
Plates and structural shapes	3.40c.
Mild steel bars	3.30c.
Cold-finished shapes	4.45c.
Rounds	3.95c.
No. 28 black sheets	4.45c.
No. 10 blue annealed sheets	3.80c.
No. 28 galvanized sheets	5.60c.
Common wire nails, base per keg	$3.90
Black wire, base per 100 lb	3.90

Boston

Pig Iron Buyers Delay Purchases—Mystic Furnace to Go In Next Month

BOSTON, July 20.—Moderate sales of pig iron, in the aggregate approximating several thousand tons, mostly New York State and foreign metal, were made in this territory the past week. No. 2X iron, cleared from Rotterdam, has sold at $20 on dock here, duty paid, or around $23, delivered, a price which has been met by New York State furnaces. Buyers are in no hurry to cover requirements, as prices show no disposition to advance. A Vermont foundry has yet to cover on 1000 tons of No. 2X, which has been pending almost a month; several Connecticut inquiries, calling for more than 2000 tons, are still open; a western Massachusetts heater manufacturer, dickering on fourth quarter iron, has not bought; an Eastern heater manufacturer has been asking for bids on a sizable tonnage for more than a week now; the Connecticut Foundry Co. has yet to cover on 1000 tons of No. 1X and No. 2X, and a sizable number of smaller inquiries are still under negotiation. A Connecticut foundry inquiring for several hundred tons of malleable has withdrawn from the market, owing to a sudden and unexpected slump in bookings. Prices on Buffalo, eastern and western Pennsylvania, Virginia and Alabama irons are still out of line with those on eastern New York and foreign irons; consequently buying is limited to small tonnages for mixture purposes. The Mystic Iron Works is still accepting business at $21, base furnace, but that price possibly would be shaded on large tonnages. Present indications are the furnace will blow in the last of August or early in September.

We quote delivered prices on the basis of the latest sales as follows, having added $3.65 freight from eastern Pennsylvania, $4.91 from Buffalo, $5.92 from Virginia, and $9.60 from Alabama:

East. Penn., sil. 1.75 to 2.25	$24.15 to $24.65
East. Penn., sil. 2.25 to 2.75	24.65 to 25.15
Buffalo, sil. 1.75 to 2.25	22.91 to 23.91
Buffalo, sil. 2.25 to 2.75	23.41 to 24.41
Virginia, sil. 1.75 to 2.25	27.92 to 28.42
Virginia, sil. 2.25 to 2.75	28.42 to 28.92
Alabama, sil. 1.75 to 2.25	30.60
Alabama, sil. 2.25 to 2.75	31.10

Shapes and Plates.—Local steel mill representatives are fairly well booked on shapes and plates for third quarter delivery, and the market for plates appears firm at 1.90c. per lb., base Pittsburgh, and for shapes at 2c. Fabricators report no pending business calling for 100 tons or more. Most of them, however, are booking a large number of small jobs, particularly for bridge repairs and schools, which in the aggregate run into round figures.

Cast Iron Pipe.—Boston has awarded 1000 tons of 48-in. pipe and 100 tons of specials to the Warren Foundry & Pipe Co., and one of the large Massachusetts gas companies has privately placed 1000 tons of large pipe. Otherwise there have been no large private or public awards. Whitman, Mass., on July 19 closed bids on 200 tons of 8-in. pipe. Prices on small pipe remain firm, while those for large are more or less unsettled. Prices quoted openly on domestic pipe follow: 4-in., $60.10 a ton, delivered at common Boston freight rate points; 6 to 12-in., $55.10 to $56.10; larger pipe, $54.10 to $55.10. The usual $5 differential is asked on Class A and gas pipe.

Coke.—Both the New England Coal & Coke Co. and the Providence Gas Co. continue to report a seasonable falling off in specifications against by-product foundry coke contracts. Actual shipments are about on a par with those of 1924, but as compared with a year ago are very much smaller. A year ago some foundries were stocking coke because of the impending coal strike. The New England companies quote foundry coke at $12 a ton, delivered within a $3.10 freight rate zone. The Providence Gas Co. recently received several thousand tons of Dutch coke, which will be utilized in the company's gas producers. Connellsville foundry coke is still available at $1 to $2 a ton cheaper, delivered, than the local product, but users are taking very little of it.

Warehouse Prices, f.o.b. Boston

	Base per Lb.
Soft steel bars and small shapes	3.265c.
Flat, hot rolled	4.15c.
Reinforcing bars	3.265c. to 3.54c.
Iron bars—	
Refined	3.265c.
Best refined	4.60c.
Norway, rounds	6.60c.
Norway, squares and flats	7.10c.
Structural shapes—	
Angles and beams	3.365c.
Tees	3.365c.
Zees	3.465c.
Plates	3.365c.
Spring steel—	
Open-hearth	5.00c. to 10.00c.
Crucible	12.00c.
Tire steel	4.50c. to 4.75c.
Bands	4.015c. to 5.00c.
Hoop steel	5.50c. to 6.00c.
Cold-rolled steel—	
Rounds and hexagons	3.95c.
Squares and flats	4.45c.
Toe calk steel	6.00c.

Old Material.—There have been further slight gains in purchases of old material against Pennsylvania mill contracts, but the market is still far from active. Most of the heavy melting steel bought recently was taken at $10.50 to $10.85, on cars shipping point, with occasional sales at as high as $11.25. Dealers have contracts with an eastern Pennsylvania mill at $14.25, delivered, or around $9.60 on cars here, which they have been unable to fill. Steel turnings are selling at around $8.75, on cars, chemical borings at about $10.35, rolling mill borings at $8.60, and mixed borings and turnings at slightly better than $8. Some stove plate has been bought for Pennsylvania mills at $13.50, delivered, but there is no local market for this material. There is also little demand for machinery cast. A Bridgeport, Conn., company is paying $17, delivered, for No. 1 cast, which means that local dealers could not pay much more than $13 on cars. Holders will not sell at that price.

The following prices are for gross-ton lots delivered consuming points:

Textile cast	$19.50 to $20.00
No. 1 machinery cast	19.00 to 19.50
No. 2 machinery cast	17.00 to 18.00
Stove plate	13.00 to 13.50
Railroad malleable	19.00 to 19.50

The following prices are offered per gross-ton lots, f.o.b. Boston rate shipping points:

No. 1 heavy melting steel	$10.50 to $11.25
No. 1 railroad wrought	12.00 to 12.50
No. 1 yard wrought	12.00 to 12.50
Wrought pipe (1 in. in diameter, over 2 ft. long)	9.50 to 10.00
Machine shop turnings	8.25 to 8.75
Cast iron borings, chemical	10.00 to 10.50
Cast iron borings, rolling mill	8.00 to 8.50
Blast furnace borings and turnings	8.00 to 8.50
Forged scrap	8.50 to 9.00
Bundled skeleton, long	8.50 to 9.00
Forged flashings	8.50 to 9.00
Bundled cotton ties, long	8.25 to 8.50
Bundled cotton ties, short	8.50 to 9.00
Shafting	15.00 to 15.50
Street car axles	16.50 to 17.50
Rails for rerolling	11.00 to 11.50
Scrap rails	10.50 to 11.00

Detroit Scrap Market Notably Firm

DETROIT, July 20.—Shipments of pig iron in the district are heavier this month than for several months past, due to low stocks in melters' yards and heavy production in the automotive industry. Hydraulic compressed registered an advance of 50c. per ton and the heavy demand for this material will probably show a slightly higher point before the end of the week. The general tone of the market is very firm.

The following prices are quoted on a gross ton basis f.o.b. producers' yards, excepting stove plate, No. 1 machinery cast and automobile cast, which are quoted on a net ton basis:

Heavy melting and shoveling steel	$13.25 to $13.75
Borings and short turnings	9.00 to 9.50
Long turnings	8.00 to 8.50
No. 1 machinery cast	17.00 to 18.00
Automobile cast	21.50 to 22.50
Hydraulic compressed	11.50 to 12.00
Stove plate	13.50 to 14.50
No. 1 busheling	11.25 to 11.75
Sheet clippings	7.00 to 7.50
Flashings	10.25 to 10.75

Canadian Pacific Buys Rails—Dominion Mills Operating Well

TORONTO, ONT., July 20.—The Algoma Steel Corporation, Sault Ste. Marie, Ont., has booked a good volume of new orders for its mills, including one from the Canadian Pacific Railway for 10,600 tons of steel rails, on which it is now working. Another order for 6000 tons of rails has just been received from the Wabash Railway for delivery at Windsor, Ont. At various times during the past two or three months the early closing of Canadian mills has been predicted, but so far this step has not become necessary. On the contrary, it is now reported that mills at Sault Ste. Marie and Hamilton, Ont., which are now operating close to capacity, have sufficient orders ahead for continuous operations in most departments for about three months. The Sydney, N. S., mills are also well supplied with orders and running at upward of 60 per cent of capacity. The production of pig iron, ingots and castings is being maintained at a high level. Six blast furnaces are active in Canada, as follows: British Empire Steel Corporation, Sydney, N. S., two; Steel Co. of Canada, Ltd., Hamilton, Ont., two; Algoma Steel Corporation, Sault Ste. Marie, Ont., two.

Canadian Scrap Market More Active

TORONTO, ONT., July 20.—Marked improvement in demand featured the iron and steel scrap market during the week. Following the stagnant market of the previous week, scrap sales took a general turn for the better, both in Toronto and Montreal districts. Orders, however, were all for spot delivery and were from consumers who had allowed their stock holdings to run low. Some large tonnages have recently been shipped into the Hamilton district, where the demand for heavy melting steel and turnings is fairly steady. Foundries throughout Ontario and Quebec are showing more interest in the scrap market, and tonnages involved in recent orders are larger than formerly, although the average melt remains unchanged. In the Montreal market dealers report a stronger demand both for domestic and export account. Montreal prices are holding firm at the reductions announced a week ago. Dealers' buying prices are as follows:

	Toronto	Montreal
Per Gross Ton		
Steel turnings	$9.50	$6.00
Machine shop turnings	9.50	6.00
Wrought pipe	7.00	6.00
Rails	11.00	8.50
No. 1 wrought scrap	11.00	13.00
Heavy melting steel	11.00	7.50
Steel axles	16.00	17.00
Axles, wrought iron	18.00	19.00
Per Net Ton		
Standard car wheels	16.00	16.00
Malleable scrap	13.00	12.00
Stove plate	12.00	13.00
No. 1 machinery cast	16.00	18.00

Shipments of Iron Ore by States

Minnesota provided nearly 60 per cent of the ore shipped from mines in the United States in 1925, as in 1924, according to figures prepared by the Bureau of Mines. The total from that State was 38,022,237 tons, against 31,076,114 tons in 1924. Michigan was in second position in each year and Alabama third. No other State reached 1,000,000 tons. The figures, for the principal States, of shipments (exclusive of ore containing 5 per cent or more of manganese) follow:

	1925	1924	Per Cent Increase
Minnesota	38,022,237	31,076,114	22
Michigan	15,254,003	11,248,641	36
Alabama	6,891,081	6,557,596	5
Pennsylvania	917,255	807,411	14
Wisconsin	933,214	786,006	19
Wyoming	489,622	363,096	35
New York	413,517	303,386	36
Utah	268,529	164,154	64
New Mexico	172,959	189,371	—9
New Jersey	164,523	101,123	63
Tennessee	164,073	179,293	—8
All other States	233,750	307,184	—24
Total	63,924,763	52,083,375	23

FABRICATED STEEL

Awards Exceed 23,000 Tons—3500 Tons for Dayton Plant—Cincinnati Bridge to Take 17,000 Tons

The week's awards of structural steel construction total more than 23,000 tons, the largest being 3500 tons for a plant near Dayton, Ohio, for the Delco Light Co. A bridge at Cincinnati, now up for bids, will require 17,000 tons, but an early award is not expected. Aside from this project the new work in the market is very light. Awards were as follows:

NORTH ADAMS, MASS., 100 tons, bridge, to McClintic-Marshall Co.

POUGHKEEPSIE, N. Y., 800 tons, Hudson River Bridge, to McClintic-Marshall Co.

NEW YORK, 3483 tons, in the following jobs reported by the Structural Board of Trade for members: Office building at 66-74 Court Street, Brooklyn, to Taylor-Fichter Steel Construction Co.; column cores for a building at Varick, Houston and King Streets, New York, to A. E. Norton, Inc.

NEW YORK, 7000 tons (erection only), Savoy-Plaza Hotel, to Post & McCord; fabrication contract awarded some time ago to the American Bridge Co.

NEW YORK, 1050 tons, apartment building at 779 West End Avenue, to Eastern Steel Co.

NEW YORK, 165 tons, apartment building on Kingsbridge Road, to Alpha Iron Works.

NEW YORK, 220 tons, club building for Columbia University at 437 West 117th Street, to Easton Structural Steel Co.

BROOKLYN, 170 tons, residence at Himrod Street and Bushwick Avenue, Brooklyn, to Easton Structural Steel Co.

BROOKLYN, 270 tons, theater at 381 Utica Avenue, Brooklyn, to Belmont Iron Works.

PLAINFIELD, N. J., 375 tons, addition to hospital, to Belmont Iron Works.

NEWARK, N. J., 425 tons, Prudential Insurance Co. Building, to an unnamed fabricator.

PENNSYLVANIA RAILROAD, 1500 tons, bridges, to American Bridge Co.

READING RAILROAD, 450 tons, bridges, to American Bridge Co.

BINGHAMTON, N. Y., 1200 tons, power plant for Metropolitan Edison Co., to Belmont Iron Works.

PHILADELPHIA, 750 tons, subway work, to American Bridge Co.

ATLANTIC CITY, N. J., 125 tons, office building, to the American Brown Boveri Electric Corporation.

BALTIMORE, 350 tons, Knights of Pythias building, to American Bridge Co.

CHATTANOOGA, TENN., 1000 tons, Southern Railway viaduct, to an unnamed fabricator.

HAGERSTOWN, MD., 200 tons, factory for Victory Cooler Door Co., to Jones & Laughlin Steel Corporation.

WARREN, PA., 270 tons, Warren Savings & Trust Co., to Jones & Laughlin Steel Corporation.

DETROIT, 200 tons, street crossings for Grand Trunk Railway, to American Bridge Co.

DETROIT, 500 tons, substation, Detroit Edison Co., to Whitehead & Kales Co.

GENEVA, OHIO, 150 tons, bridge for Nickel Plate railroad, to Fort Pitt Bridge Works.

CLEVELAND, 400 tons, Auditorium Hotel, to Van Dorn Iron Works Co.

MORAINE CITY, OHIO, near Dayton, 3500 tons, Delco Light Co. plant, to McClintic-Marshall Co.

CHICAGO, 1700 tons, Adams and Franklin Building, to McClintic-Marshall Co.

CHICAGO, 625 tons, power house for Illinois Central, to American Bridge Co.

CHICAGO, 120 tons, crane runway, Western Electric Co., to McClintic-Marshall Co.

CHICAGO, 500 tons, Cornelius-Stratford apartment hotel, to Midland Structural Steel Co., Chicago.

OMAHA, NEB., 1060 tons, theater, to Omaha Steel Co.

ST. PAUL, MINN., 400 tons, service station for Mack International Motor Truck Corporation, to St. Paul Foundry Co.

IOWA, 150 tons, Harrison County bridges, to Standard Bridge Co., Omaha.

BOYLSTON JUNCTION, WIS., 100 tons, beams for tunnel for Minneapolis, St. Paul & Sault Ste. Marie Railway, to Worden Allen Co.

AMERICAN FALLS, IDAHO, 305 tons, bridge over American Falls dam for the United States Bureau of Reclamation, to Minneapolis Steel & Machinery Co.

PORTLAND, ORE., 350 tons, Pacific Telephone & Telegraph Co., office building, to Poole & McGonigle, Portland.

SAN FRANCISCO, 300 tons, tank plates for Southern Pacific Co., to unnamed Eastern mill.

ROSEVILLE, CAL., 100 tons, for pipe line for Roseville Water Co., to Western Pipe & Steel Co., San Francisco.

Structural Projects Pending

Inquiries for fabricated steel work include the following:

HARTFORD, CONN., 250 tons, Colonial Theater.

ATTLEBORO, MASS., 100 tons, theater, offices and stores.

BOSTON, 300 tons steel beams, Transit Department.

PROVIDENCE, R. I., 600 tons, annex to the Rhode Island Hospital.

FLORIDA, 150 tons, State highway bridge.

CLEVELAND, 135 tons, mill building addition for Bourne Fuller Co.

ERIE, PA., tonnage not stated, New York Central Railroad depot.

CINCINNATI, tonnage being estimated, Chamber of Commerce Building; Harry Hake & Rudolph Tietig, architects.

CHESAPEAKE & OHIO, 17,000 tons, bridge over Ohio River at Cincinnati; contract may not be let for six months.

NEW ORLEANS, tonnage unstated, building for Pan-American Petroleum Corporation.

RENO, NEV., 114 tons, Arcade Building; bids in.

GUERNSEY, WYO., 200 tons, penstock and surge tank for United States Bureau of Reclamation; bids July 23 at the office of the Bureau, Denver, Colo.

LOS ANGELES, 400 tons, police substation and receiving hospital on Georgia Street, Brombacher Iron Works, Los Angeles, low bidder.

LOS ANGELES, 300 tons, steel transmission towers from the Coolidge Dam site to Hayden, Ariz., for United States Indian Irrigation Service, Department of the Interior, Federal Building, Los Angeles; bids close July 30.

SAN FRANCISCO, 225 tons, two toll bridges on the Vallejo-Sears-Point Highway (Napa River bridge, 125 tons and Sonoma Creek bridge, 100 tons); bids to be called shortly by A. O. Stewart, 58 Sutter Street, San Francisco.

Railroad Equipment

Fewer locomotives were in need of repair on July 1 this year than at any time since the compilation of the records was begun in 1920, according to reports filed by the carriers with the car service division of the American Railway Association. The total number was 9228 or 14.7 per cent of the number on line.

Class I railroads on July 1 had 5909 serviceable locomotives in storage, a decrease of 69 compared with the number on June 15.

The Georgia & Florida has ordered 20 to 30 50-ton composite drop-side gondola cars from the American Car & Foundry Co.

An inquiry is in the market for 150 cars for the Philadelphia subways.

The Chicago Great Western is inquiring for 300 40-ton box cars and 200 40-ton automobile cars.

The Chicago, Rock Island & Pacific is asking for prices on five 70-ft. gas-electric motor cars for suburban service. Five cars of the same type are also wanted by the Chicago, Milwaukee & St. Paul.

The Texas & Pacific has ordered 6 locomotives from the Baldwin Locomotive Works.

D. C. Elphinstone, 120 South Calvert Street, Baltimore, engineer, has inquiries out for a number of saddle tank industrial locomotives, 12 x 16, 24 tons capacity, and 13 x 18, 30 tons capacity, standard gage; and 14 x 20, 36 tons capacity, and 15 x 22, 40 tons capacity, heavy tank type, standard gage.

A "Congress of American Industry" will be held in Philadelphia, Sept. 17, 21, 22, 23 and 24. The distributor, the responsibilities of the employer and of the employee, industrial management, business ethics and human relationships are among the topics planned for discussion. There will be two sessions each day, morning and afternoon. The chairman of the congress is E. T. Trigg, president of John Lucas & Co., Inc., and chairman of the industrial relations committee of the Philadelphia Chamber of Commerce.

Domestic sales of oak leather belting, as reported by the Leather Belting Exchange for the week ending July 3, totaled 73,659 lb. at an average price of $1.70 per lb. Sales for the preceding week totaled 75,731 lb. at an average price of $1.723, while 79,187 lb. at an average price of $1.769 were reported for the corresponding week of 1925.

NON-FERROUS METAL MARKETS

The Week's Prices

Cents per Pound for Early Delivery

	July 14	July 15	July 16	July 17	July 19	July 20
Lake copper, New York	14.25	14.25	14.25	14.25	14.25	14.25
Electrolytic copper, N. Y.*	13.87½	13.97½	13.97½	14.00	14.00	14.00
Straits tin, spot, New York	63.25	63.00	63.00	....	63.50	63.37½
Lead, New York	8.65	8.65	8.65	8.65	8.65	8.65
Lead, St. Louis	8.50	8.50	8.50	8.50	8.50	8.50
Zinc, New York	7.92½	7.87½	7.85	7.80	7.80	7.80
Zinc, St. Louis	7.57½	7.52½	7.50	7.45	7.45	7.45

*Refinery quotation; delivered price ¼c. higher.

NEW YORK, July 20.—All the markets are quiet, but the price situation is strong. Copper is higher than a week ago after fairly heavy sales. The tin market is very dull, but quotations are advancing. Lead is practically unchanged and zinc, after a fairly active week, is again lower.

Copper.—The market made further advances during the last week and electrolytic copper sold as high as 14.25c. per lb., delivered. One seller reports that total domestic sales for the week ended Wednesday, July 14, amounted to close to 22,000 net tons. Most of this metal was for August-September delivery and went at prices ranging from 14.07½c. to 14.12½c., delivered. Since then prices have gradually advanced with some business being done at 14.20c. to 14.25c., delivered. One large seller reports the sale of 2000 tons yesterday for domestic consumption, all at an equivalent of 14.25c., delivered in the Valley. Practically all large producers are now asking 14.25c., which we quote as the market, though there may be a small quantity of metal still obtainable as low as 14.20c., delivered. After the fairly heavy buying referred to, the market is quite dull today, but firm. The export market is quiet, with some sales reported at 14.35c., c.i.f. Lake copper is quoted at 14.25c., delivered.

Tin.—The market is featureless, dull and uninteresting. The past week has been the most inactive in many months. The market is evidently a waiting one, with consumers showing no interest and dealers remaining aloof. The London market, however, has been advancing, which explains the higher prices here. Dealers would naturally not come into the market at present high levels, and the fact that consumers show no interest is taken to indicate that they are well enough covered to wait. Prices in London today were about £7 per ton higher than a week ago, with spot standard quoted at £285, future standard at £282 15s. and spot Straits at £294. The Singapore market today was £290 15s. Prices here are correspondingly higher with spot Straits quoted today at 63.37½c., New York, largely nominal. Arrivals thus far this month have been 5685 tons, with 5270 tons reported afloat.

Lead.—The market is quiet with August metal difficult, if not almost impossible, to obtain. General demand is less. The leading interest continues to quote 8.50c., New York, as its contract price, at which level it is still taking some business. The outside market is considerably stronger with quotations at 8.50c., St. Louis, and 8.65c. to 8.70c., New York.

Zinc.—Demand is light and the market is easier. This naturally follows after the heavy buying of the past week or two. Prime Western zinc for early delivery is quoted today at 7.45c., St. Louis, after having sold during the week as high as 7.57½c. and 7.60c., St. Louis. Galvanizers were the chief buyers in the recent purchases and have evidently covered themselves for the time being.

Nickel.—Wholesale lots of ingot nickel are quoted at 35c. with shot nickel at 36c. per lb. Electrolytic nickel is obtainable at 39c.

Antimony.—Civil war and floods in the mining districts of China are reported with the result that the

Metals from New York Warehouse

Delivered Prices per Lb.

Tin, Straits pig	64.00c. to 64.50c.
Tin, bar	67.00c. to 68.00c.
Copper, Lake	15.25c.
Copper, electrolytic	15.00c.
Copper, casting	14.75c.
Zinc, slab	8.50c. to 9.00c.
Lead, American pig	9.00c. to 9.25c.
Lead, bar	11.25c. to 12.25c.
Antimony, Asiatic	14.00c. to 15.00c.
Aluminum, No. 1 ingot for remelting (guaranteed over 99 per cent pure)	30.00c. to 30.50c.
Babbitt metal, commercial grade	30.00c. to 35.00c.
Solder, ½ and ½ guaranteed	39.00c.

Metals from Cleveland Warehouse

Delivered Prices per Lb.

Tin, Straits pig	68.25c.
Tin, bar	71.25c.
Copper, Lake	15.00c.
Copper, electrolytic	15.00c.
Copper, casting	14.00c.
Zinc, slab	8.50c.
Lead, American pig	9.00c.
Antimony, Asiatic	16.50c.
Lead, bar	11.25c.
Babbitt metal, medium grade	22.50c.
Babbitt metal, high grade	73.50c.
Solder, 50-50	41.25c.

Rolled Metals from New York or Cleveland Warehouse

Delivered Prices, Base per Lb.

Sheets—	
High brass	19½c. to 20½c.
Copper, hot rolled	22¾c. to 23¾c.
Copper, cold rolled, 14 oz. and heavier	25c. to 26c.
Seamless Tubes—	
Brass	24c. to 25c.
Copper	24¾c. to 26¾c.
Brazed Brass Tubes	27½c. to 28½c.
Brass Rods	16⅞c. to 17⅞c.

From New York Warehouse

Delivered Prices, Base per Lb.

Zinc sheets, (No. 9), casks	13.00c.
Zinc sheets, open	13.50c.

Non-Ferrous Rolled Products

Mill prices on bronze, brass and copper products were advanced on July 16 ½c. on seamless tubing and ¼c. on all other products. Brass pipe for plumbing is quoted at 23.50c. and commercial bronze pipe at 27c. Zinc sheets were advanced ¼c. on July 20 to 11.75c. Lead full sheets are also up ¼c., and have been quoted at 12.25c. to 12.50c. since June 16. There has been no change in aluminum products in ton lots.

List Prices Per Lb., f.o.b. Mill

On Copper and Brass Products, Freight up to 75c. Per 100 Lb. Allowed on Shipments of 500 Lb. or Over

Sheets—	
High brass	19.12½c.
Copper, hot rolled	22.75c.
Zinc	11.75c.
Lead (full sheets)	12.25c. to 12.50c.
Seamless Tubes—	
High brass	24.00c.
Copper	24.75c.
Rods—	
High brass	16.87½c.
Naval brass	19.62½c.
Wire—	
Copper	16.12½c.
High brass	19.62½c.
Copper in Rolls	21.62½c.
Brazed Brass Tubing	27.12½c.

Aluminum Products in Ton Lots

The carload freight rate is allowed to destinations east of the Mississippi River and also allowed to St. Louis on shipments to destinations west of that river.

Sheets, 0 to 10 gage, 3 to 30 in. wide	37.50c.
Tubes, base	48.00c.
Machine rods	34.00c.

Rolled Metals, f.o.b. Chicago Warehouse

(Prices Cover Trucking to Customers' Doors in City Limits)

	Base per Lb.
Sheets—	
High brass	18⅞c. to 19⅞c.
Copper, hot rolled	22½c.
Copper, cold rolled, 14 oz. and heavier	24¾c.
Zinc	12.00c.
Lead, wide	11.08c.
Seamless Tubes—	
Brass	23½c. to 25c.
Copper	24¼c. to 25¾c.
Brazed Brass Tubes	26⅞c. to 29½c.
Brass Rods	16⅝c.

Old Metals, Per Pound, New York

The buying prices represent what large dealers are paying for miscellaneous lots from the smaller accumulators, and the selling prices are those charged consumers after the metal has been properly prepared for their uses.

	Dealers' Buying Prices	Dealers' Selling Prices
Copper, heavy crucible	12.00c.	13.25c.
Copper, heavy and wire	11.50c.	12.25c.
Copper, light and bottoms	9.75c.	11.00c.
Brass, heavy	7.25c.	9.00c.
Brass, light	6.25c.	8.00c.
Heavy machine composition	8.75c.	10.00c.
No. 1 yellow brass turnings	8.50c.	9.25c.
No. 1 red brass or composition turnings	8.00c.	9.00c.
Lead, heavy	7.50c.	7.75c.
Lead, tea	5.50c.	6.25c.
Zinc	4.25c.	4.75c.
Sheet aluminum	17.00c.	19.00c.
Cast aluminum	17.00c.	19.00c.

market here for Chinese metal is considerably stronger. Spot delivery is quoted at 14.50c., New York, duty paid, with July-August shipment at 13.75c.

Aluminum.—Virgin metal, 98 to 99 per cent pure, is quoted at 27c. to 28c. per lb., delivered.

CHICAGO, July 20.—The demand for copper has been well sustained and the price has gained strength. Tin, although quiet during the early part of the week, has become active within the last few days. Both zinc and lead are firm and in good demand. The buying of old metals continues in good volume. We quote, in carload lots, Lake copper, 14.50c.; tin, 64.75c.; lead, 8.75c.; zinc, 7.65c.; in less than carload lots, antimony, 15c. On old metals we quote copper wire, crucible shapes and copper clips, 10.50c.; copper bottoms, 9.50c.; red brass, 9c.; yellow brass, 7.75c.; lead pipe, 7c.; zinc, 5c.; pewter, No. 1, 35c.; tin foil, 43.50c.; block tin, 52c.; aluminum, 17.75c., all being dealers' prices for less than carload lots.

REINFORCING STEEL

Philadelphia Viaduct Takes 8000 Tons—Total Awards Exceed 11,000 Tons

Including an 8000-ton award for a viaduct in Philadelphia, the week's awards of reinforcing bars amounted to more than 11,000 tons. Jobs up for bids total about 6000 tons, the largest being 1300 tons for a convention hall at Atlantic City, N. J., and 1000 tons for a cement mill at Universal, Pa. Awards follow:

BOSTON, 200 tons, auto sales and service station, to Joseph T. Ryerson & Son, Inc., Boston.

BROOKLINE, MASS., 100 tons, brook tunnel, to Morrison-Stevens Co.

HARTFORD, CONN., 150 tons, stores, to Edward A. Tucker Co.

FORDHAM, N. Y., 115 tons, New York Central Bridge, by Lyons & Slattery, general contractor, to National Bridge Works.

BROOKLYN, 120 tons, water conduit, by Triest Construction Co., general contractor, to McClintic-Marshall Co.

JERSEY CITY, 140 tons, Y. M. C. A., to Rerolled Steel Co., Buffalo.

PHILADELPHIA, 8000 tons, for viaduct to be built jointly by the city of Philadelphia and the Pennsylvania Railroad, to Concrete Steel Co.

WASHINGTON, PA., 75 tons, machine shop building for Washington Mould & Machine Co., to Carlem Engineering Co., Pittsburgh.

CHICAGO, 600 tons of rail steel, McCormick Building, to Calumet Steel Co.

CHICAGO, 125 tons of rail steel, garage for L. Shanesy, to Calumet Steel Co.

EVANSTON, ILL., no tonnage stated, Aredale warehouse, to Calumet Steel Co.

IOWA, 200 tons, State road work, to Concrete Steel Co.

PALO ALTO, CAL., 600 tons, Palo Alto Hospital, to unnamed San Francisco jobber.

OAKLAND, CAL., 300 tons, warehouse for Carr & Creston, Fourth and Alice Streets, to Gunn, Carle & Co., San Francisco.

AMERICAN FALLS, IDAHO, 166 tons, bridge over American Falls dam for the United States Bureau of Reclamation, to unnamed firm.

SACRAMENTO, CAL., 150 tons, five highway bridges for California Highway Commission, to unnamed firms.

Reinforcing Bars Pending

Inquiries for reinforcing steel bars include the following:

BOSTON, 140 tons, garage, Coleman Brothers, Inc., general contractors.

ATLANTIC CITY, N. J., 1300 tons, foundation for Convention Hall.

WILMINGTON, DEL., 100 tons, cold storage building for Diamond Ice & Coal Co.

PHILADELPHIA, 300 tons, store and office building at Thirteenth and Wood Streets.

CLEVELAND, 600 tons, Motors Realty Co.

CHICAGO, tonnage being estimated, office building at Adams and Franklin Streets; Jens Jensen, architect.

CHICAGO, 300 tons, hotel at Clark and Huron Streets; Levy & Klein, architects.

CHICAGO, tonnage being estimated, Fleetwood Hotel; Quinn & Christensen, architects.

CHICAGO, tonnage being estimated, office building at Adams and Franklin Streets; Alfred F. Alschuler, architect.

CHICAGO, tonnage being estimated, loft building at 173 West Madison Street; Frank D. Chase, Inc., engineer.

UNIVERSAL, PA., 1000 tons, cement mill for the Universal Portland Cement Co.

LOS ANGELES, 381 tons, viaduct, Riverside Drive and Dayton Avenue.

LOS ANGELES, 575 tons, American Can Co., factory, Forty-eighth and Santa Fe Avenues.

LOS ANGELES, 500 tons, Fletcher Drive bridge.

ORLAND, CAL., 750 tons, Stoney Gorge Dam near Orland; bids Aug. 18.

COVELO, CAL., 100 tons, highway bridges on the Mendocino Pass road; bids July 27.

Bethlehem Merger Case Adjourned

WASHINGTON, July 20.—Hearings in the Bethlehem Steel Co. merger case before Examiner McCorkle of the Federal Trade Commission will be adjourned after tomorrow until fall. The hearings were resumed in Washington yesterday when Henry P. Hoffstot, vice-president of the Pressed Steel Car Co. was called as a witness on direct examination. He was asked about the effect of competition from the Cambria car-building plant of the Bethlehem Steel Co. at Johnstown, Pa., since Bethlehem took over the Cambria Steel Co. He replied that any competition had some effect, but that in the instance inquired about it was only incidental.

The witness today was Harry Blake of Barber & Ross, Washington, jobbers and fabricators in steel as well as dealers in hardware lines.

Despite the country-wide campaigns for the prevention of accidents less than 25 per cent of the industries of America are at present members of organizations actively interested in industrial accident prevention. This was pointed out by Louis Resnick, assistant to the president of the American Museum of Safety, 141 East Twenty-ninth Street, New York, in an address on the need of a national safety museum delivered before the Industrial Accident Prevention Conference at Washington, July 14.

PERSONAL

Ernest Wooler, chief engineer Timken Roller Bearing Co., Canton, Ohio, sailed on July 14 for England. He plans to investigate the development of anti-friction bearings in all industries, including automotive, industrial and transportation. The British Timken plant at Common Lane, Ward End, Birmingham, will be visited. Mr. Wooler first came to the United States in 1913 with a party of British automotive engineers, to study American practices and methods of motor car construction and manufacture. He remained as engineer of Continental Motors Co., Detroit. Later he became assistant chief engineer Chandler Motor Car Co. and in 1919 chief engineer Cleveland Automobile Co. He became automotive engineer of the Timken company in 1925. A year later he was advanced to chief engineer, in charge of all automotive, industrial, experimental and service engineering, as announced in THE IRON AGE of Jan. 21 last.

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P. A. Fernsier has been appointed superintendent of coke works, Pittsburgh Crucible Steel Co., Midland, Pa. He succeeds John W. Hacker who resigned recently to supervise the construction of the new by-product coke plant, Central Steel Co., Massillon, Ohio, of which he will become superintendent upon completion.

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L. J. Belnap has been elected president Worthington Pump & Machinery Corporation, 115 Broadway, New York, to succeed C. Phillip Coleman, who will be chairman of the board. Mr. Belnap was formerly president of the Rolls-Royce of America, Inc., Springfield, Mass., and still later chairman of the board of Wills-St. Claire Co., Inc., Marysville, Mich.

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John C. Scheeler has been elected president of the Buffalo Wire Works Co., Inc., Buffalo, to succeed his father, the late Martin Scheeler. Other officers are Ferdinand M. Grimm, vice-president, and Charles A. Scheeler, secretary and treasurer. The Buffalo Wire Works Co., Inc., manufacturer of wire products and artistic metal work, was established in 1869 and has formed a prominent Buffalo industry for over half a century.

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George B. Storer, Jr., who has been president and general manager of the Standard Steel Tube Co., Toledo, Ohio, which has been purchased by the Elyria Iron & Steel Co., Cleveland, will remain at the Toledo plant in the capacity of plant manager and will probably be elected a director of the Elyria Iron & Steel Co.

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C. H. Tinker, formerly New England representative of the Republic Iron & Steel Co., has joined the sales organization of the Mystic Iron Works, Boston.

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John T. Underwood, president Underwood Typewriter Co., Hartford, Conn., has been made a member of the Legion of Honor by France in recognition of his work in extending relief to French soldiers and others in France during the World War. Mr. Underwood was presented the insignia in Washington.

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John E. Frederick, president Kokomo Wire & Steel Co., Kokomo, Ind., has recently been reelected president of the Indiana State Chamber of Commerce.

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W. P. Woodside, formerly metallurgist with the Studebaker Corporation, has become identified with the Climax Molybdenum Co., 61 Broadway, New York, in a consulting capacity, with headquarters in Detroit.

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W. D. Brown has been promoted from commercial agent in the Department of Commerce office in New York to assistant trade commissioner with station at Rio de Janeiro, Brazil.

James Somerville, Jr., Vaiden, Miss., has been made assistant trade commissioner of the Department of Commerce, with assignment at London. Among his duties will be investigation of markets for American foodstuffs.

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D. W. McGeorge has been appointed sales engineer Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa., manufacturer of hydraulic presses, rolling mill machinery, special machinery, steel castings and rolling mill rolls, etc. Mr. McGeorge was previously connected with the sales department of the Edgewater Steel Co., Pittsburgh.

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W. M. Corse, metallurgist, Washington, sailed for England on July 14 to attend to a number of scientific matters relating to various metallurgical subjects. The primary object of his trip is to close negotiations for the American rights for the Durville patent for pouring Monel metal, aluminum bronze and other similar alloys. In addition, he will visit the National Physical Laboratory, Teddington, England, and other scientific institutions in Great Britain. He will attend the Institute of Metals meeting at Liège, Belgium, Sept. 1 to 4. Mr. Corse has been appointed representative of the Institute of Metals of Great Britain, of which organization he is honorary corresponding secretary for the United States, to the International Foundrymen's Congress, which will meet at Detroit, Sept. 27 to 30.

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William M. Neckerman has been appointed assistant to the vice-president, Youngstown Sheet & Tube Co., Youngstown, and in this capacity will be in charge of tube mills. He has been with the company 20 years. Pipe mill officials and employees tendered him a dinner on July 10, in recognition of the promotion.

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C. W. Fisher, who has been associated with the sales engineering department of the McMyler Interstate Co., Bedford, Ohio, for the past two years, has been appointed sales manager of that company's branch sales office in Chicago.

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John H. Patton, formerly superintendent of sheet and tin mills of the Trumbull Steel Co., Warren, Ohio, will leave Warren shortly to become superintendent of a sheet and tin mill property in India.

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W. F. Stubblebine, superintendent of the powdered coal department of the Trumbull Steel Co., Warren, Ohio, has resigned, to become European representative for the Babcock & Wilcox Co., New York.

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B. A. Epperson has left the United Alloy Steel Corporation, Canton, Ohio, to give personal attention to real estate interests in Cincinnati and vicinity. He was connected with the sales department of the company for 20 years and represented it in Indiana and Ohio territory, with district offices in Indianapolis and Cincinnati. He was also a director and one of the promoters of the Dominion Sheet Metal Corporation, Hamilton, Ont., this company being the first to make galvanized sheet steel in Canada. His address is 2427 Robertson Avenue, Norwood, Cincinnati.

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Walter F. Ingals has been elected president Central Tube Co., Pittsburgh.

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Nils Anderson, president Debevoise-Anderson Co., 114 Liberty Street, New York, and a director of the Mid-City Trust Co., Plainfield, N. J., was elected vice-president of the latter institution on July 12.

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A. J. Gerlach, who has been assisting George L. Erwin, Jr., sales manager Kearney & Trecker Corporation, Milwaukee, in looking after the advertising, has been promoted to advertising manager, and Joseph Trecker has been appointed assistant advertising manager. Mr. Erwin will continue supervision of this department, chiefly in an advisory capacity.

Frank L. Estep, member of the firm of Perin & Marshall, consulting engineers, New York, left for Europe on the Mauretania, July 21.

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Charles W. Harris, San Francisco, has been selected to organize a sales organization for the Dunn Painting Machine Co., San Francisco, with headquarters in the Dettner Building, 835 Howard Street, San Francisco. Robert S. Weintraub, formerly with the Weinstock-Nichols, Co., San Francisco, has been appointed special representative.

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W. W. Fleming, formerly sales manager Berger & Carter Co., San Francisco, and lately with A. M. Castle & Co., since it absorbed the Berger & Carter Co., has joined the sales force of A. B. Ambler, San Francisco representative of the Allan Wood Iron & Steel Co., Philadelphia, and the Clayton-Mark Co., Chicago.

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Arthur V. Farr, sales manager Roland Steel Co., Inc., 114 Liberty Street, New York, is visiting the Pacific Coast in the interests of his company, which handles a special seamless steel tubing in Germany.

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H. D. Mercer, formerly at the Portland, Ore., office of the Truscon Steel Co., has organized the Mercer Steel Co. with office and warehouse at 194 North Thirteenth Street, Portland, and will specialize in handling reinforcing bars, wire mesh and related steel products.

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Wallace Clark, 50 West Twelfth Street, New York, consulting engineer in industrial management and chairman of the committee on elimination of waste in management of the Society of Industrial Engineers, is a member of a commission headed by Dr. Edwin W. Kemmerer, Princeton University to investigate for Poland the financial and economic condition of that country.

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Willard Foster will be in charge of the district sales office which Trumbull Steel Co., Warren, Ohio, has opened at 803 Union Trust Building, Cincinnati. He will handle the distribution of the company's products in southern Ohio, southern Indiana and Kentucky.

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John W. Hacker has been appointed superintendent of the new by-product coke plant of the Central Furnace Co., Massillon, Ohio. He was formerly superintendent of the coke plant of the Pittsburgh Crucible Steel Co., Midland, Pa. Frank A. Coleman has been appointed chief chemist of the blast furnace and by-product coke works of the Central Furnace Co. His previous associations were with the National Tube Co., Lorain, Ohio; United Alloy Steel Corporation, Wheeling Steel Corporation and Jones & Laughlin Steel Corporation.

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Michael Gallagher, who has been at the head of the Bituminous Coal Mining Department of the M. A. Hanna Company, Cleveland, for 18 years, has tendered his resignation, effective Aug. 1, and will become associated with the Van Sweringen interests, and will make a general survey of the coal situation as it affects the railroad investments of the Van Sweringen Brothers. He will retain his interest in the Hanna company and continue as a member of the board of directors of that company.

A prisoner in Sing Sing was the winner of the first prize in a contest recently conducted by C. F. Pease Co., 832 North Franklin Street, Chicago, to choose a slogan for the blueprint industry. "Let Blueprints Tell Your Story," was the slogan chosen, as announced in *Slogan News*, a recent publication of the company, maker of blueprinting machinery.

A second oil-electric locomotive has been ordered by the New York Central Railroad for use on its West Side tracks in New York. The locomotive will be of the 100-ton type, and the joint product of the Ingersoll-Rand, General Electric and American Locomotive companies.

OBITUARY

OBERLIN SMITH, a former president of the American Society of Mechanical Engineers and widely known as an inventor of presses and dies, died July 19, at Lockwold, his estate at Bridgeton, N. J. Death was due to heart disease. Mr. Smith was born at Cincinnati on March 22, 1840, but became a resident of Bridgeton when a child. He was educated at technical schools in Cleveland and Philadelphia, and in 1863 established a machine shop at Bridgeton. In 1877 it was enlarged into the Ferracute Machine Co., of which he was president and mechanical director until his death. During his long active life he obtained more than fifty patents on his own inventions, many of which were for cutting, drawing, coining and punching presses, drilling machines, looms, soldering machines, aerating devices, and other contrivances. Nearly all of these things were manufactured or utilized by his company at Bridgeton. He was a member of the Engineers' Club, New York, the American Society of Civil Engineers, the American Institute of Mining and Metallurgical Engineers, the American Institute of Electrical Engineers, and the American Society for the Advancement of Science.

OBERLIN SMITH

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WILLIAM H. HAMILTON, formerly vice-president and a director Rosedale Foundry & Machine Co., Pittsburgh, died at his home in that city July 18. He was a founder and president of the Specialty Mfg. Co., which about 24 years ago was consolidated with the Rosedale Foundry Co. The name was changed to the Rosedale Foundry & Machine Co., of which he became vice-president in charge of the machine shop activities. He retired about three years ago and was 68 years old.

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CHARLES A. RAND, for many years an inventor for the International Harvester Co., Chicago, died at his home, 2429 North Maplewood Avenue, Chicago, July 12. Mr. Rand came from Norway as a blacksmith 46 years ago. He was early associated with the Minneapolis Harvester Co. and later with the Deering Harvester Co.

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CHARLES ALBERT COFFIN, founder of the General Electric Co., Schenectady, died on July 14 at his home in Locust Valley, L. I. He is considered the financial and industrial genius who took inventions of Thomas A. Edison and other pioneers in the electrical industry and translated them into workable machinery. Owen D. Young, now chairman of the board of the General Electric Co., stated that what Mr. Edison was to electrical invention Mr. Coffin had been to the electrical business; he called him "its greatest organizing genius." Mr. Coffin was born in Maine in December, 1844, and started his business career as a manufacturer of shoes in Lynn, Mass. He first became interested in electricity in 1883, forming a syndicate which took over the American Electric Co., of which Prof. Elihu Thomson was the inventive genius. The factory was moved from New Britain, Conn., to Lynn and the name changed to the Thomson-Houston Electric Co. This concern was merged in 1892 with the Edison General Electric Co. into the General Electric Co. Mr. Coffin was elected president and held that office for 21 years. During this period he shaped the financial policy of his company and sponsored its engineers through

the great electrical developments of the early years of this century. He was particularly active in developing the Curtis steam turbine and the notable research laboratory of the company. Mr. Coffin retired as president in June, 1913, becoming chairman of the board, which post he held until 1922, being succeeded then by Owen D. Young as chairman, with Gerard Swope as president.

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WILLIAM WELSH SANDERSON, general sales manager Carborundum Co., Niagara Falls, N. Y., died on July 6 at the home of his mother at Stratford, Ont., after a long illness. Mr. Sanderson was 46 years old. He was born in Brantford, Ont., moving to Stratford when a child. He entered the employ of the Carborundum Co. on Sept. 1, 1901, as a clerk in the billing and order departments. In 1904 he was appointed to the sales staff and for many years was the company's sales representative in the South. In 1909 he was made district sales manager for the Pittsburgh territory and for ten years was in charge of the warehouse, office and sales force in that city. In 1919 he was appointed general sales manager, succeeding George R. Rayner, who was made vice-president of the company. He is survived by his widow, two daughters, his mother, five sisters and a brother.

W. W. SANDERSON

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EMIL BURSIC died suddenly at the age of 54 years, at Pittsburgh on July 12. He had been identified with the engineering staff of what is now the Garrison division of the Mackintosh-Hemphill Co. for 23 years.

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PETER STUPP, president Stupp Brothers Bridge & Iron Co., Syndicate Trust Building, St. Louis, and pioneer bridge builder of the Middle West, died July 16 in the Glenwood Sanitarium, St. Louis County. Death was due to a nervous breakdown he suffered some time ago. With his two brothers, George and Julius, now chairman of the board and treasurer, respectively, Mr. Stupp founded the company of which he was president. He was 66 years of age.

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ALFRED D. CRESSLER, consulting gas engineer, died recently at his home in Cincinnati. For many years he was president Kent-Murray Mfg. Co., Fort Wayne, Ind., manufacturer of gas machinery. From 1915 until 1920 he did special engineering work in Washington. He was 75 years old.

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GEORGE E. MCCAGUE, one of Andrew Carnegie's partners and traffic manager of the Carnegie Steel Co. from 1891 until its absorption by the United States Steel Corporation in 1901, died at his home in Sewickley, Pa., July 14. He was born in Lawrence County, Pa., 68 years ago, but had spent the greater part of his life in Pittsburgh.

"Non-Destructive Testing of Wire Hoisting Rope by Magnetic Analysis" is the title of technologic paper No. 315 of the United States Bureau of Standards. The author is R. L. Sanford, physicist. The investigation, discussed in the paper, has been of a fundamental nature, consisting of a study of the magnetic properties of steel wire of the kind used in the manufacture of wire rope and the effect on these properties of deterioration due to varied causes.

Ferroalloys Shipped from Furnaces in the United States

Shipments of ferroalloys in 1925 showed an increase of 24 per cent over 1924, according to figures of the United States Bureau of Mines. Ferromanganese showed an increase of 9 per cent, spiegeleisen of 26 per cent and ferrosilicon of 47½ per cent. The principal items, together with values, are shown in the appended table.

Production of ferromanganese is given as 259,780 gross tons, averaging 78.93 per cent of manganese and containing 205,046 tons of manganese metal. In this production 519,139 tons of foreign manganese ore was used, together with 34,942 tons of domestic manganese ore, 4949 tons of iron ore and 11,072 tons of cinder, scale and scrap. The quantity of manganese ore used per ton of ferromanganese was 2.133 gross tons, compared with 2.186 tons in 1924 and with 2.243 tons in 1923.

Brazil led as a source of foreign manganese ore, with 207,238 gross tons, averaging 43.52 per cent of manganese; Russia furnished 194,006 tons, averaging 48.17 per cent; India, 68,326 tons, averaging 50.42 per cent; Africa, 33,582 tons, averaging 46.97 per cent. The remainder came from Chile, China, Cuba and Porto Rico. The average manganese content in all foreign ore consumed was 46.41 per cent.

Recovery of 80.36 per cent of the metallic manganese content in all ore consumed is pointed to by the bureau as evidence of improvement in the metallurgy of the manufacture of ferromanganese.

Ferroalloys Shipped from Furnaces in the United States, 1924-25

	1924		1925	
Variety of Alloy	Gross Tons	Value	Gross Tons	Value
Ferromanganese [a]	232,821	$23,533,668	254,005	$26,006,439
Spiegeleisen	76,179	2,354,731	95,890	2,407,226
Ferrosilicon (7 per cent or more silicon)	150,021	7,558,984	221,387	11,405,060
Ferromolybdenum	107	254,970	210	236,957
Ferrotungsten	741	1,110,553	1,238	1,991,123
Ferrovanadium	1,355	3,641,724	1,841	4,843,635
Other varieties [b]	36,020	4,795,318	41,651	6,157,660
	497,244	$43,249,948	616,222	$53,048,100

[a] Includes a small quantity of silico-manganese.
[b] Ferrochromium, ferrophosphorus, ferrotitanium, ferrozirconium, and zirconium-ferrosilicon in both years and ferrouranium also, in 1925.

Character of American Iron Ores in 1925

More than 96 per cent of the iron ore mined in the United States in 1925 consisted of hematite, according to figures of the Bureau of Mines. Total hematite production was 59,546,690 tons, against 52,102,300 tons in 1924. Magnetite was in second place each year, with brown ore and carbonate following in that order. Totals in the two years were as follows:

	1925	1924	Per Cent Increase
Hematite	59,546,690	52,102,300	14.3
Magnetite	1,472,004	1,347,711	9.2
Brown ore	884,600	814,159	8.6
Carbonate	4,703	3,249	44.8
Total	61,907,997	54,267,419	14.1

In each case about 85 per cent of the hematite came from the Lake Superior district, and 11 or 12 per cent from the Birmingham district, the remainder being scattered. The other ores were scattered in origin, no one district predominating to any extent. The figures are exclusive of ore containing 5 per cent, or more, of manganese.

The technical aspects of the loss of the U. S. S. Shenandoah, the dirigible, compiled from the record of the Court of Inquiry, will be published in the August issue of the *Journal* of the American Society of Naval Engineers. The publication, consisting of 216 pages with illustrations, has been authorized by the Navy Department. Reprints of the article may be obtained from the secretary of the society, Commander A. M. Charlton, Navy Department, Washington, at $1 per copy.

Machinery Markets and News of the Works

DECLINE IN TOOL SALES

July Business, Except at Chicago, Is Generally Below That of June

Largest Buying Recently Has Been by Atlantic Coast Line, Illinois Central, Northern Pacific and International Harvester Co.

THE Illinois Central and Northern Pacific railroads and the International Harvester Co. have practically completed the buying of fairly large lists of tools, and the Atlantic Coast Line has placed very large orders for machine tools, but otherwise the machine tool markets show something of mid-summer dullness, less accentuated this year, however, than usual.

In general the markets are not so active as last month, prospective buyers being somewhat slower to reach the point of placing orders.

The automotive industry is not buying much at present, but with new models on the way an improved demand from that source is expected in the late summer or early fall.

A large list to be issued by the Delco Light Co. for its new plant at Dayton, Ohio, one of the most important buying programs in prospect, is expected by the trade in about two weeks.

Orders for machine tools in June exceeded shipments for the first time since November, according to the records of the National Machine Tool Builders' Association. Also they were the largest since November. They were 85 per cent more than the monthly average of 1922, 1923 and 1924.

New York

NEW YORK, July 20.

WITH the coming of the mid-summer vacation period, sales of machine tools in the New York district have slumped considerably, and expectations held early in the month that July might almost equal June in volume of business probably will not be realized. Machine tool salesmen have a fairly large list of definite prospects on which to work, but it is getting more difficult to bring buyers to the point of closing. New York selling offices have received large orders from the Atlantic Coast Line whose purchases, totaling perhaps $200,000 in value, have been placed over the last two weeks. Manning, Maxwell & Moore, Inc., and the Niles-Bement-Pond Co. received a large share of the business. The Coney Island & Brooklyn Railroad Co. has bought a 21-in. vertical drill press; a Scranton, Pa., company, a 26-in. shaper; also one to a Chicago company; a Bethlehem, Pa., plant bought two axle lathes; the Illinois Central bought two 16-in. geared-head lathes; a Dallas, Tex., manufacturer bought a 20-in. geared-head lathe; a Denver, Colo., company took an 80-in. horizontal boring and drilling machine and a 6-ft. radial drill; a locomotive builder bought a 6-spindle boiler plate drill; companies at Roselle, N. J., Rochester, N. Y., and Dayton, Ohio, each bought two Lincoln-type milling machines; a motor company at Newcastle, Ind., bought three gear shaping machines; a Flint, Mich., automobile plant bought a spline milling machine; a Saginaw, Mich., company bought two worm grinders; a Cicero, Ill., company, a rotary surface grinder; companies at Baltimore and Fort Wayne, Ind., bought thread milling machines and a Waltham, Mass., watch manufacturer bought two bench lathes and a bench miller.

The Burnham Boiler Corporation, Irvington-on-Hudson, N. Y., has revised plans in preparation for a proposed two-story factory branch, storage and distributing building, 55 x 100 ft., at Queens Village, N. Y., to cost about $50,000. Alexander MacLean, 149 Jamaica Avenue, Jamaica, L. I. is architect.

L. K. Comstock & Co., 21 East Fortieth Street, New York, electrical equipment and engineering, have acquired property, 70 x 75 ft., at 653-57 Eleventh Avenue. Three five-story buildings now on site will be razed and a new multi-story industrial building erected, the first four floors to be used by the Comstock organization. J. M. Felson, 250 West Fifty-seventh Street, is architect.

The Brooklyn Union Gas Co., 176 Remsen Street, Brooklyn, has plans for extensions and improvements in its mechanical shop and automobile service, repair and garage building, three stories, at 8424 Ditmas Avenue, estimated to cost $50,000.

Pisciotta Brothers, 426 Troutman Street, Brooklyn, manufacturers of plumbers' woodwork and other turned wood products, have awarded a general contract to J. S. Dubroff, 1290 Sutter Avenue, Brooklyn, for a four-story addition, to cost $100,000 with machinery. Laspia & Samenfeld, 269 Broadway, Brooklyn, are architects.

The Superintendent of Lighthouses, Staten Island, N. Y., is asking bids until Aug. 2 for 8 whistling buoys, 7 bell buoys, 36 can and non-riveted buoys; 82 steel welded buoys; 90 cast iron sinkers; and 21 cast iron balls, 400 to 7000 lb. each, with forged mooring eye cast in.

Kingan & Co., Ltd., affiliated with the Kingan Packing Co., Indianapolis, meat packer, plans the installation of cold storage and refrigerating equipment in its two-story and basement storage and distributing plant at Brook Avenue and East 156th Street, New York, to cost $150,000. Frank T. Lewis is company architect. John Phillip Voelker, 979 Third Avenue, New York, is associate architect. R. S. Sinclair is president.

The International Cement Corporation, 342 Madison Avenue, New York, is arranging for a new common stock issue to total $3,125,000, a considerable portion of the proceeds to be used for expansion and improvements in its mills.

The Department of Public Works, Albany, N. Y., A. W. Brandt, commissioner of highways, will soon begin the erection of a two-story repair shop, and equipment building, 68 x 190 ft., near Poughkeepsie, N. Y., estimated to cost $75,000. Low bid for building construction has been received from the L. H. Swenson Co., 30 Market Street, Poughkeepsie.

The Simon Patent Box Corporation, New York, has leased space in the building at 11 West Twentieth Street, for the manufacture of paper boxes and containers.

Morris Whinston, 116 West Thirty-ninth Street, New York, architect, has completed plans for extensions and improvements in the four-story automobile service, repair and garage building at 429-35 East Twenty-third Street, to cost about $100,000.

Julius Eickmann, 156 East Forty-second Street, New York, architect, has filed plans for a four-story automobile service, repair and garage building, 75 x 100 ft., at 349 Canal Street, to cost $80,000.

The Board of Trustees, Bellevue and Allied Hospitals, 415 East Twenty-sixth Street, New York, J. J. McGrath, president, will soon begin the erection of a proposed automobile service, repair and garage building at Twenty-sixth

Street and First Avenue, to cost in excess of $100,000 with equipment.

The American Potash & Chemical Corporation, Woolworth Building, New York, has been formed under Delaware laws with a capital of 1,000,000 shares of stock, no par value, assessed at $100,000,000, for taxation purposes, to take over the American Trona Corporation, same address, and other organizations, to operate and expand plant facilities for the production of potash and affiliated specialties. L. A. G. Dru and H. S. Emlaw head the new company.

The Harris & Joffe Plumbing Co., Paterson, N. J., has acquired a mill building at Temple and Matlock Streets for $200,000, and plans to use a portion of the structure for a new storage and distributing works, with repair, pipe-threading and other departments. Samuel Harris is president.

The Durant Motor Co., 250 West Fifty-seventh Street, New York, is arranging to transfer the manufacture of its Flint automobile, heretofore produced at Flint, Mich., to its plant at Elizabeth, N. J., used up to the present time for the exclusive manufacture of the Star automobile. The plant of the Flint division was sold recently to the General Motors Corporation, Detroit. It is expected to make the change early in September. Colin Campbell, vice-president of the Durant company, heretofore in charge of the Star car division, will direct operations of the Flint division, as well, in the future.

The Board of Public Works, South Amboy, N. J., has authorized an early call for bids for electrically-operated pumping machinery for the municipal waterworks. John A. Conlogue is city engineer.

The Bernardsville Township Board of Education, Bernardsville, N. J., is planning the installation of manual training equipment in a proposed two-story high school estimated to cost $250,000, for which bids will be taken at once on a general contract. Rasmussen & Wayland, 36 West Forty-seventh Street, New York, are architects.

The American Safety Signal Corporation, Newark, recently chartered with a capital of 40,000 shares of stock, no par value, has leased the factory at 897-901 Frelinghuysen Avenue, totaling about 10,000 sq. ft. of floor space, for its new plant for the manufacture of improved traffic signals and control devices. An extensive experimental department will be provided. Eugene S. Mayer is president.

Fire, July 15, destroyed a portion of the plant of the Royal Electrical Laboratory, 109 Tichenor Street, Newark, manufacturer of electrical specialties, with loss reported at $25,000. It is planned to rebuild.

The Public Service Electric & Gas Co., Public Service Terminal, Newark, has arranged a fund of $9,500,000 for power substation and transmission line expansion during the present year, extending into 1927. The work will include the construction of five new power substations at West Side and Sip Avenues, Jersey City; on Linnet Street, Bayonne; at River and Sparrow Streets, Paterson; near Pershing Avenue, Carteret; and at Monmouth Junction, respectively. Seven other substations at Newark, Fort Lee, Cranford, Elizabeth, Passaic, Harrison and Trenton, will be reconstructed and additional equipment installed. New equipment will be installed in twenty-six other power substations in different cities. A new equipment storage and distributing plant will be established in Jersey City, and the present such works at Paterson will be enlarged.

T. McCurdy Marsh and Philip R. Van Duyne, receivers for the Day-Elder Motors Corporation, Colt Street and Paine Avenue, Irvington, N. J., appointed July 2, have received permission from the court to borrow $25,000 to continue the business, including proposed purchases of material for motor truck manufacture and operation of a parts department. A portion of manufacture will be devoted to parts production for reserves.

Modern type, down draft forges are being made in the blacksmith shops of the Ludlum Steel Co., Watervliet, N. Y., manufacturer of special steels. This change is expected to bring about improvement in the working conditions and consequently the quantity and quality of output.

The L. J. Wing Mfg. Co., manufacturer of ventilating fans and exhausters, forced draft blowers, unit heaters, etc., has purchased the property in Newark which it has been occupying for the past five years, and will immediately erect an extension, increasing its capacity about 50 per cent. The company maintains general offices at 352 West Thirteenth Street, New York.

The Sunlike Illuminating Co. has been organized as a subsidiary of the American Engineering & Sales Corporation, 1317 F Street, N. W., Washington, and has established an office at 475 Fifth Avenue, New York. The Sunlike Illuminating Co. is importing its product, a lighting apparatus which it is claimed eliminates eye fatigue, but eventually it will manufacture this apparatus in the United States. At present it is being made in two European factories, one in Paris and the other in Brussels.

The Mack Cylinder Boring Co., 259 Halsey Street, Newark, N. J., has been incorporated and is engaged in the business of rebabbitting bearings for automobiles and motor boats.

The Shav-Rite Safety Razor Corporation, Patchogue, L. I., is contemplating the manufacture of a safety razor blade and desires to get in touch with manufacturers of machinery for making these blades.

Buffalo

BUFFALO, July 19.

PLANS are being completed by the Rochester Gas & Electric Corporation, Rochester, N. Y., for its proposed hydroelectric generating plant on Canadea Creek, to cost in excess of $2,000,000 with transmission system.

The Art Metal Construction Co., Jones Street and Gifford Avenue, Jamestown, N. Y., manufacturer of metal filing equipment, etc., has awarded a general contract to the Warren Construction Co., Jamestown, for its four-story addition, 118 x 162 ft., to cost $150,000 with equipment. Lockwood, Greene & Co., 1 Pershing Square, New York, are architects and engineers. Henry K. Smith is president.

The Board of Education, Crown Point, N. Y., contemplates the installation of manual training equipment in its proposed two-story high and grade school to cost $125,000, for which bids will soon be asked on a general contract. Coffin & Coffin, 522 Fifth Avenue, New York, are architects.

The Community Water Service Co., Rochester, N. Y., is disposing of a bond issue of $1,350,000, a portion of the proceeds to be used for extensions and improvements in waterworks, including pumping machinery and accessory equipment, and for the acquisition of additional properties. The company also operates systems at Camden, N. J., Washington, Pa., Peoria, Ill., and in other localities.

The Great Lakes Portland Cement Corporation, 999 Hamburg Turnpike, Buffalo, has taken out a permit to construct a power substation and electric shop at its new mill now in course of building. The entire project will cost in excess of $1,000,000.

The Chamber of Commerce, Dunkirk, N. Y., John F. Weingart, president, is said to be considering the erection of a one-story industrial building, 50 x 200 ft., with facilities for metal-working and kindred service, estimated to cost $60,000.

Chicago

CHICAGO, July 19.

SALES so far in July are in good volume compared with June of this year and July of 1925. This is due in a large measure to the closing of several large railroad and industrial lists put out during the spring. Up to this week orders from smaller buyers have not been numerous, but in the past three days considerable business has come from that source.

The Illinois Central, the Northern Pacific and the International Harvester Co. have practically completed buying. The Santa Fe list is active, and those of the Burlington and the Chicago & North Western are being figured on. Deliveries are improving slowly, and in some quarters it is reported that shipments are now running about 25 per cent ahead of new orders. The Absolute Contractor Co., Beloit, Wis., has bought a small list, and a Chicago shop has purchased a 5-in. forging machine. A Chicago district user bought a 300-ton steel press brake, and the Bendix Brake Corporation, South Bend, Ind., has purchased several miscellaneous items. The Chicago Board of Education is asking for prices on three Pexto burring machines and a Pexto bar folding machine. The used tool market is active, and prices being obtained are considered fair. The trade has received advice of an auction, Aug. 17 and 18, of the plant equipment of the Hinkley Motors, Inc., Ecorse, near Detroit, Mich.

Maier & Co., 2863 Lincoln Avenue, Chicago, will erect a one-story and basement boiler plant, 56 x 86 ft., estimated to cost $27,000 with equipment. Richard Drieser, 64 West Randolph Street, is architect.

The Mississippi Valley Structural Steel Co., Decatur, Ill., plans the construction of a steam power house at its proposed works at Melrose Park, Ill. The entire project will cost about $600,000.

T. W. Peterson, Galesburg, Ill., will rebuild the foundry on South Chambers Street recently damaged by fire. M. E. Sweeney is the general contractor.

The Crane Market

THE volume of new inquiry for overhead and locomotive cranes continues small but a number of desirable inquiries have not as yet developed into orders. The market for overhead track and hoists is becoming more active with a sizable project under inquiry by Thomas E. Murray, New York, for the New York Edison Co. and a more recent request for prices on track and hoists from the same engineer for the New York Steam Corporation. The General Electric Co. has closed on two small cranes for Buffalo, N. Y., but the 100-ton overhead for Schenectady, N. Y., and list of several small cranes for West Philadelphia are still open. The United States Shipping Board, Washington, has been taking bids on eight 8-ton, short span hand power cranes. Bids on the 24 electric cranes for the New York Rapid Transit Corporation, 85 Clinton Street, Brooklyn are understood to have been forwarded for approval to the Transit Commission with Alfred Box & Co. and reported to have been recommended.

Tarentum, Pa., has been inquiring for a 10-ton water works crane. The Elliott Co., Jeannette, Pa., is in the market for a 15-ton double trolley crane. The Carnegie Steel Co. is about to close on two 80-ton ladle cranes for Homestead, Pa.

Among recent purchases are:

General Electric Co., Schenectady, N. Y. a 5-ton and 10-ton, 57-ft. 8-in. span, 3-motor, overhead traveling cranes for Buffalo, N. Y., reported purchased from the Shepard Electric Crane & Hoist Co.

Phoenix Utility Co., 71 Broadway, New York, eighteen 45-ton and two 30-ton fixed taintor gate hoists and one 30-ton trash gate hoist from the Maine Electric Co.

Merchants Despatch Transportation Co., Rochester, N. Y., three 15-ton crane trolleys from the Niles-Bement-Pond Co.

City of New York, a 2-cu. yd. grab bucket hoist, cage operated, for a garbage disposal plant on East Fifty-sixth Street, from the Shepard Electric Crane & Hoist Co.

Simpson By-Product Co., Knoxville, Tenn., a 20-ton used Brownhoist locomotive crane from Philip T. King, New York.

W. P. Brown & Sons Lumber Co., Louisville, Ky., a 12-ton locomotive crane from the American Hoist & Derrick Co.

Westinghouse Air Brake Co., Wilmerding, Pa., a 3½-ton overhead crane from the Northern Engineering Works.

Stone & Webster, Inc., Boston, two 150-ton overhead cranes for the Susquehanna Power Co., from the Niles-Bement-Pond Co.

The Chicago branch of the Hill & Griffiths Co., manufacturer of foundry equipment, purchased from the Baltimore & Ohio Chicago Terminal Railway property adjoining its plant at 4606 West Sixteenth Street, and will erect additional buildings.

The Yoeman Brothers Co., 1433 Dayton Street, Chicago, manufacturer of pumping machinery, will build a one-story addition, 58 x 85 ft., to cost $24,000. Berlin & Swern, 19 South La Salle Street, are architects.

The Chicago Great Western Railroad Co., 303 West Harrison Street, Chicago, will build a one-story engine house to cost $11,500.

Emil J. Paidar, Elm and Wells Streets, manufacturer of barbers' equipment, will build a seven-story and basement factory and office. The general contractor is S. N. Crowen, 22 West Monroe Street.

H. H. McNair has retired from the H. C. McNair Co., Endicott Building, St. Paul, Minn., and the name of the company has been changed to the Edward Kopper Co. The latter company will continue as sales representative in the Northwest territory for the following companies: Crucible Steel Co. of America, Pittsburgh Crucible Steel Co., Elwell-Parker Electric Co., Etna Forge & Bolt Co., Falcon Steel Co., Gary Screw & Bolt Co., Pittsburgh Screw & Bolt Co., Industrial Paint Co., Mt. Vernon Car Mfg. Co. and Verona Tool Works.

The Kreager Oil Well Cleaner Co., 422 Broadway, Denver, Colo., has been incorporated with 150,000 shares of capital stock of $1 par value, and will manufacture a gas burner for heating paraffine or asphalt which has clogged an oil well. The company will soon be in the market for small lots of pipe of ½ in. and 2⅜ in. diameter. D. H. Waldron is secretary and treasurer.

The Economy Pump Machinery Co., 122 Curtis Street, Chicago, will take bids on a general contract for a new two-story plant at 3431 West Forty-eighth Place, to cost about $55,000. A. Epstein, 2001 West Pershing Road, is architect and engineer. R. H. Thomas is president.

The City Council, New Ulm, Minn., will ask bids soon for the erection of a new two-story municipal electric light and power plant, to cost $42,000 with equipment. F. D. Minium is city engineer.

The Great Western Sugar Co., Sugar Building, Denver, Colo., has preliminary plans under advisement for the erection of a new beet sugar refinery at Johnstown, Colo., to include power house and machine shop, to cost approximately $1,000,000.

The Iowa Southern Utilities Co., Ottumwa, Iowa, is disposing of a bond issue of $1,100,000, a portion of the proceeds to be used for extensions and improvements in power plants and system. J. Ross Lee is vice-president.

The Plymouth Radio Shops, 39 West Jackson Boulevard, Chicago, has tentative plans for the construction of a one-story factory, 125 x 200 ft., at Dalton, Ill., for the manufacture of radio equipment and parts, estimated to cost $45,000 with machinery. J. F. Neiburger is president.

Whitney Brothers, Grand Marais, Minn., have plans for a one-story electric light and power plant for local commercial service, and will begin work soon. It is reported to cost about $30,000 with equipment.

James Morrows Sons, 202 South Genesee Street, Waukegan, Ill., have plans for the construction of a two-story and basement automobile service, repair and garage building, 76 x 260 ft., to cost $200,000 with equipment. C. W. Webster, 5 North Genesee Street, is architect.

The Central West Public Service Co., Jamestown, N. Dak., is disposing of a note issue of $1,550,000, a portion of the proceeds to be used for extensions and improvements in power plants and system. W. N. Albertson is president.

The Board of Education, Pueblo, Colo., plans the installation of manual training equipment in its proposed two-story and basement high school to be erected at Orman and Michigan Avenues, to cost $250,000, for which bids are being asked on a general contract. William W. Stickney, First National Bank Building, is architect.

Ovens, power equipment, conveying and other machinery will be installed in the proposed two-story and basement plant, 143 x 150 ft., to be erected by the Campbell Baking Co., 285 Madison Avenue, Davenport, Iowa, to cost $150,000. Clausen, Kruse & Klein, Kahl Building, are architects.

The Wood Hydraulic Hoist & Body Co., 3135 South Wabash Avenue, Chicago, has awarded a general contract without competition to Otto Randolph, 53 West Jackson Boulevard, for its proposed one-story factory branch and distributing plant, to cost $75,000. O. W. Miller is president.

The Crane Co., 836 South Michigan Avenue, Chicago, has asked bids on a general contract for a one-story factory branch and distributing plant, 66 x 132 ft., at Aurora, Ill., to cost about $75,000. Frank P. Gray, Aurora, is architect.

Pittsburgh

PITTSBURGH, July 19.

THE local machine tool trade is more busy in efforts to close business that has been pending for several weeks than on new inquiries. There has been a considerable slackening in demand, but it is no more marked than is usual at this time of year. Sales with most dealers and manufacturers' representatives are more numerous than for the corresponding period last year.

The Pittsburgh Machine Tool Co., Corey Avenue, Braddock, Pa., has acquired property adjoining its plant, 130 x 215 ft., and is reported to be planning expansion.

F. Guy Ash, Morgantown, W. Va., and associates have acquired the plant and assets of the Pittsburgh Sheet Glass Co., Washington, Pa., at a receiver's sale for $254,649. The new owners are said to have plans under way for the organization of a company to take over and operate the plant.

The Overland Door Co., Lewistown, Pa., will begin the construction of a new one-story plant, 60 x 140 ft., on a

two-acre tract near the city. Later extensions are contemplated.

The Carbon Fuel Co., 2104 Kansas Street, Charleston, W. Va., C. A. Cabell, president, is said to have plans under way for extensions and improvements at its coal mines in Kanawha County, including the construction of a new tipple, complete with shaker screens and auxiliary equipment, estimated to cost $75,000.

The United Natural Gas Co., Oil City, Pa., has plans for a new one-story machine shop, 120 x 130 ft., to cost $50,000 with equipment.

The Pittsburgh Rolls Corporation, Forty-second Street, Pittsburgh, has awarded contract to the Pittsburgh Engineering, Foundry & Construction Co., 511 Homewood Avenue, for a one-story addition, 75 x 120 ft., to cost approximately $50,000.

The Interstate Oxygen Co., 4409 Eoff Street, Wheeling, W. Va., will soon begin the construction of a new plant at Ceredo, W. Va., for the production of industrial oxygen, acetylene gas and kindred specialties, to cost in excess of $60,000 with equipment. Edward F. Connell is head.

The Owens Bottle Co., Toledo, Ohio, has awarded a general contract to the Rust Engineering Co., 311 Ross Street, Pittsburgh, for an addition to its branch plant at Huntington, W. Va., 400 x 485 ft., estimated to cost $250,000 with equipment. A portion of the structure will be used for storage and distributing service.

The Floridin Co., Inc., Warren, Pa., has inquiries out for a clay puddling machine, similar to type used in brick manufacture.

The Penn Public Service Corporation, Johnstown, Pa., an interest of the Associated Gas & Electric Co., New York, has acquired the property of the White Oak Light, Heat & Power Co., Hollsopple, Pa., and vicinity, and plans extensions in this district.

St. Louis

ST. LOUIS, July 19.

BIDS are being asked by the Capital Iron Works, Inc., Seventh and Holliday Streets, Topeka, Kan., Jack Singleton, head, for its proposed new plant, consisting of a one-story structural shop, 98 x 200 ft.; one-story machine shop, 50 x 100 ft. and one-story office, 50 x 55 ft. The complete plant will cost about $200,000 with equipment. R. A. Finney, New England Building, is consulting engineer.

The Missouri Casket Co., 2106 East Ninth Street, Kansas City, Mo., Earl T. Newcomer, president, has engaged Hans von Unwerth, Finance Building, consulting engineer, to prepare plans for its proposed plant, estimated to cost $65,000 with equipment.

The Manhattan Oil Co., 15 West Tenth Street, Kansas City, Mo., has acquired the local storage and distributing works of the Monark Oil Co., including fuel and distillate plants and lubricating oil works. The new owner will continue operation, and is contemplating extensions and betterments.

The city clerk, Smithville, Mo., is asking bids until July 27 for equipment for extensions in the municipal waterworks and sewage systems, including five centrifugal pumps, 200,000-gal. capacity mechanical filter plant, 60,000-gal. capacity elevated steel tank and auxiliary apparatus. W. B. Rollins & Co., Railway Exchange Building, Kansas City, Mo., are consulting engineers.

The Missouri Electric Power Co., Marshfield, Mo., has acquired the municipal electric light and power plant at Fredericktown, Mo., and will consolidate with its properties. Plans are under consideration for extensions and improvements, including transmission line construction.

The Thompson Hardware Co., Topeka, Kan., will soon take bids for a three-story and basement storage and distributing plant, 100 x 150 ft., to cost about $150,000 with equipment. T. W. Williamson & Co., Central National Bank Building, are architects.

The Common Council, Chandler, Mo., plans the installation of pumping equipment in connection with extensions and improvements in the water supply system to cost $80,000. The Benham Engineering Co., Gumbel Building, Kansas City, Mo., is engineer.

The Missouri Pacific Railroad Co., Railway Exchange Building, St. Louis, is said to be arranging a call for bids early in August, for proposed additions to its repair shops at Nevada, Mo., consisting of a one-story machine shop and one-story addition to the engine house, estimated to cost $130,000 with equipment. E. A. Hadley is chief engineer. E. M. Tucker is company architect.

The Southwestern Light & Power Co., Oklahoma City, Okla., has arranged a fund of about $300,000 for extensions and improvements at Mountain Park, Hobart, Carter, Hollis and other cities in this section, including the construction of about 100 miles of high-tension transmission lines. The company is negotiating for the purchase of the municipal electric light and power plant at Altus, Okla., and will carry out an expansion program in this district.

The Board of Education, Columbia, Mo., plans the installation of manual training equipment in its proposed two-story and basement David H. Hickman High School, estimated to cost $275,000 for which superstructure will soon begin. William B. Ittner, Inc., Board of Education Building, St. Louis, is architect.

The A. P. Green Fire Brick Co., Mexico, Mo., has tentative plans under way for a one-story addition, 60 x 500 ft., to cost about $250,000 with equipment. The company recently disposed of a note issue of $600,000. A. P. Green is president.

The Butchart Mfg. Co., 417 East Twelfth Street, Joplin, Mo., which has been in business for a number of years, has recently been incorporated with capital stock of $100,000. There will be no change in the company's line, which is that of manufacturing ore concentrating apparatus, flotation machines, tables, thickeners, filters and pumps.

Philadelphia

PHILADELPHIA, July 19.

SMITH, DRUM & CO., Allegheny Avenue, near Fifth Street, Philadelphia, engineers and machinists, have plans for an addition to cost in excess of $40,000 with equipment.

The Otto Engine Works, Thirty-third and Walnut Streets, Philadelphia, have acquired four acres on the State Road, West of Rhawn Street, for about $50,000, and are said to be contemplating the erection of a new plant on the site.

The G. Woolford Wood Tank Mfg. Co., Darby Street, Philadelphia, has filed plans for additions to its plant and improvements in present buildings.

Max A. Bernhardt, 721 Walnut Street, Philadelphia, architect, has plans for an eight-story automobile service, repair and garage building, 65 x 125 ft., at 819-23 Walnut Street, to cost $175,000 with equipment.

The Pennsylvania Flexible Metallic Tubing Co., Broad and Race Streets, Philadelphia, has plans for a two-story and basement addition, 30 x 65 ft., for which foundations will soon be laid. W. H. Cookman, 420 West Price Street, is architect.

The Sun Oil Co., Finance Building, Philadelphia, has an expansion and improvement program under way at its refinery at Marcus Hook, Pa., to cost approximately $2,000,000, including the installation of high-pressure stills, tanks and auxiliary equipment. A new administration building will be constructed at Tenth and Green Streets.

The United Gas Improvement Co., Broad and Arch Streets, Philadelphia, operating electric light and power and other public utilities, has closed negotiations for the purchase of a group of electric power properties in Bucks County and vicinity. Extensions and improvements will be made in the different plants and systems, including transmission line construction.

The Boyertown Casket Co., Boyertown, Pa., has awarded a general contract to Charles H. Schlegel, 528 Washington Street, Reading, Pa., for rebuilding its six-story factory recently destroyed by fire, with loss in excess of $60,000. Additional equipment will be installed. Lawrence E. Mory is president.

A steam power house, 70 x 81 ft., with 10-ft. diameter radial brick stack, will be constructed at the mill of the Magee Carpet Co., Bloomsburg, Pa. Plans have been drawn by the Ballinger Co., Twelfth and Chestnut Streets, Philadelphia, architect and engineer.

The United Filters Corporation, Hazleton, Pa., has begun the erection of a one-story addition for the production of metal and wood patterns.

The City Council, Allentown, Pa., plans the installation of pumping equipment in connection with proposed extensions in the water system to develop a new source of supply estimated to cost close to $500,000. Morris Knowles, Inc., Westinghouse Building, Pittsburgh, is consulting engineer. Thomas J. Roth is superintendent of the water department.

The Freeland Bobbin Works, South Washington Street, Freeland, Pa., is reported to be planning the erection of a two-story addition, 50 x 100 ft., for the production of bobbins and kindred textile mill equipment. It is understood that work will be started late this year.

The East Penn Foundry Co., Macungie, Pa., has awarded a general contract to the Potruch Construction Co., Allen-

town, Pa., for proposed additions to its plant to double approximately the present capacity.

The Metropolitan Edison Co., Reading, Pa., has concluded arrangements for the purchase of the Annville & Palmyra Electric Co., Annville, Pa., for a sum in excess of $200,000. Extensions and improvements are planned. The company has also acquired through its parent organization, the General Gas & Electric Co., 50 Pine Street, New York, the Bernville Light & Power Co., operating at Bernville, Bethel and vicinity, for $60,000 and will arrange for expansion in this district.

The Joint School Board of Lower Frederick Township, Spring Mount, Pa., has plans under way for a two-story and basement school at Schwenkville, Pa., to be known as the J. Horace Landis vocational high and grade school, estimated to cost $100,000. Watson K. Phillips, 213 South Fifth Street, Philadelphia, is architect.

The Pennsylvania Railroad Co., Broad Street Station, Philadelphia, has begun work in the vicinity of Chester, Pa., for the proposed electrification of its line to Wilmington, Del. The entire project will cost more than $10,000,000 and is expected to require about 24 months for completion.

The Pottstown Cold Storage & Ice Co., Pottstown, Pa., has acquired two blocks of property used at one time for the plant of the Potts Brothers Iron Co., for $50,000, and is said to be planning the construction of a new cold storage plant on a portion of the site.

The Boiler Service & Repair Co., 2025 North Front Street, Philadelphia, has been incorporated and has engaged in the business of repairing boilers and erecting stacks, tanks, breechings, etc. C. A. Stearns, president of the company, has for some time been superintendent of erection for the Heine Boiler Co., St. Louis. Associated with him as vice-president is William P. Hoagland, formerly superintendent of erection for the Lebanon Boiler Works, and for the past few years in business for himself as the Boiler Equipment Co.

The Kearney & Trecker Corporation, Milwaukee, manufacturer of milling machines, has opened a Philadelphia branch office in room 328, Witherspoon Building. F. G. Jackson, direct factory representative, will be in charge of the territory.

Cleveland

CLEVELAND, July 19.

MACHINE tool business has fallen off this month, due in most part to the summer lull. Some dealers, however, still have a fair volume of inquiry. The Ohio Brass Co., Mansfield, Ohio, has purchased two 16 x 36 in. Pratt & Whitney lathes and the Transue & Williams Steel Corporation, Alliance, Ohio, a 12-in vertical Pratt & Whitney model B shaper. The Timken Roller Bearing Co., Canton, Ohio, is inquiring for a special milling machine for milling housings for freight car axles. The Delco Light Co., Dayton, is working on a large list for its new plant which is expected to be out in about two weeks. Very little business is coming at present from the automotive industry.

The Aircraft Electric Appliance Co., Toledo, Ohio, has awarded contract for an addition to cost $50,000. Pratt Tracy is president.

The Motors Realty Co., Cleveland, affiliated with the Ohio Buick Co., has placed contract with the Sam W. Emerson Co., 1836 Euclid Avenue, for a four-story and basement building, 136 x 315 ft. It will contain an automobile service department.

The No-Towel Co., Sandusky, Ohio, has established a plant in the buildings occupied by the former Vim Motor Co. for the manufacture of drying equipment. C. M. Ortner is president, and L. W. Ortner, secretary and treasurer.

C. E. Heil, president and manager Continental Steel Products Co., Youngstown, advises that the company has completed moving its stock to its new location at Wickliffe, a suburb of Youngstown. It has doubled its floor space and has increased its facilities with the addition of a heavy power shear for Nos. 14 and 16 gage material, also a slitter for multiple cutting of stock No. 26 gage and lighter. J. L. Hanna is assistant manager. The company deals principally in surplus stocks and seconds, in sheets, hot and cold rolled strips, heavy plates and tinplate.

The Canton Furnace & Mfg. Co., Ninth Street and Robbins Court, S. E., Canton, Ohio, has been organized with capital stock of $200,000 to manufacture furnaces of cast iron and steel, also furnace fittings. J. H. Schlafley is vice-president.

New England

BOSTON, July 19.

THE machine tool business is quiet. The report of the United States Employment Service for June states that activity continues at a high peak in the Connecticut metal-working industry, and in Massachusetts and Rhode Island is well employed. In Maine, New Hampshire and Vermont, however, it is on part time. So far this month conditions in the metal-working industry of New England have been, if anything, slower than in June, owing to vacations, closings for inventory and other purposes. Textile fabrics are moving somewhat more freely, but the prospect of any buying of machine tools by textile machinery makers is quite remote. The Saco-Lowell Shops have contracted to make electrical refrigerator parts and oil burners for home use.

The city of Boston has covered on most of its machine tool requirements for schools. On July 22, however, bids will be opened on a lathe, two drills, a hack saw and a wet tool grinder for the Charlestown High School annex; a wet tool grinder, five lathes, a sensitive drill, a milling machine, gas furnaces and anvils for the Grover Cleveland School; two 16-in. x 6-ft. lathes for the Joseph H. Barnes School; and a Sidney 12-in. x 4-ft. lathe, or equivalent, and an Ames bench lathe, or equivalent, for the Donald McKay School, East Boston. Joseph Beale & Co., Boston, were low bidders on lathes for the Parkman School, South Boston, also for small miscellaneous equipment for the Donald McKay School, bids for which were p'aced in April. Boston has also placed orders for a 5 x 5-in. and 5½ x 5-in. Ingersoll-Rand portable compressors, the first at $2,004.10, and the latter at $2,258.90. The New Haven Railroad is inquiring for a four-spindle drill. This inquiry has no bearing on the one put out several weeks ago for its destroyed Connecticut roundhouse shop, which apparently has been abandoned.

Small tools are in active demand, July bookings to date running about 50 per cent ahead of those for June.

Browne & Poole, 688 Pleasant Street, New Bedford, Mass., architects, have plans in progress for a two-story and basement school, 59 x 186 ft., with wing 33 x 87 ft., to cost about $150,000, for South Dartmouth, Mass. It will contain mechanical shops.

The Mero Mfg. Co., Inc., Meriden, Conn., has been granted a Connecticut charter to manufacture machine parts. The company is capitalized for $50,000. Joseph G. Merriam is president.

Harold Field Kellogg, 378 Stuart Street, Boston, architect, has plans for a two-story automobile service, repair and garage building at Coolidge Corner, Brookline, Mass., to cost approximately $75,000 with equipment.

The Weston Foundry & Supply Co., New Britain, Conn., has been incorporated to operate a foundry for the manufacture of brass, bronze and aluminum castings and has taken over the building formerly used by the C. A. Danberg Co. Charles A. Danberg is president and treasurer.

The Eastern Massachusetts Street Railway Co., Fall River, Mass., is considering the early rebuilding of the portion of its power house on Hartwell Street destroyed by fire July 13, with loss reported at $18,000 including equipment.

The New York, New Haven & Hartford Railroad Co., Hartford, Conn., has filed plans for a new car shop, 80 x 200 ft., at East Hartford, estimated to cost $40,000. It will replace a structure destroyed by fire several months ago.

Fire, July 9, destroyed a portion of the plant of the Columbia Bobbin Co., Columbia Valley, near Colebrook, N. H., manufacturer of textile mill equipment, with loss reported at $19,000. It is planned to rebuild.

William M. Young & Son, 239 Dyer Street, Providence, R. I., have completed plans for a one-story machine works and automobile repair shop, 50 x 61 ft., and will begin work at once.

The Strand & Sweet Mfg. Co., Winsted, Conn., manufacturer of magnet wire and other electrical wire products, is completing the erection of an addition and plans to occupy the building soon. Additional equipment will be installed.

The Hartford Special Machinery Co., Homestead Avenue, Hartford, Conn., has awarded a general contract to the Lawrence & Coe Construction Co., 43 Farmington Avenue, for the proposed one-story addition to its plant, 30 x 90 ft. Buck & Sheldon, Inc., Hartford, is architect and engineer.

Blackhall, Clapp & Whittemore, 31 West Street, Boston, architects, have preliminary plans for a one-story automobile service, repair and garage building, to cost about $125,000, at Granite Street and Adams Avenue, Milton, Mass.

Fire, July 14, caused by lightning, damaged a portion of the Vernon power plant of the Connecticut River Power Co. of New Hampshire, Brattleboro, Vt., with loss reported at $30,000 including equipment.

In connection with its reorganization plans, the American Writing Paper Co., Holyoke, Mass., is arranging to retain its 16 mills at Holyoke, Unionville and Windsor Locks, Conn., and will concentrate operations at these plants; all others will be sold. A fund of about $1,400,000 is being secured, a considerable portion to be used for extensions and betterments, with machinery replacements, at the mills noted. The receivership will soon be terminated.

The Westerly Light & Power Co., Westerly, R. I., has plans for a new three-story equipment storage, distributing and service building, 56 x 85 ft., to cost about $100,000 with machinery. Jackson, Robertson & Adams, Turks Head Building, Providence, R. I., are architects.

Walden-Worcester, Inc., Worcester, Mass., manufacturer of wrenches, and Stevens & Co., 373 Broadway, New York, distributer of appliances and equipment used in the automotive, radio and cycle industries, will be consolidated in a new corporation under the name of the Stevens-Walden Worcester Co., with headquarters in Worcester. The Walden-Worcester factory building is a large one, which permits of expanding the company's manufacturing departments, and the intention is to manufacture parts of Stevens & Co.'s line which are now bought in the market. J. Verner Critchley, president Walden-Worcester, Inc., will be president of the new corporation and will have charge of manufacturing. Louis Schwab, owner of Stevens & Co., will be vice-president and director of sales, John Macauley will be the treasurer, and George A. Gaskill the clerk of the corporation.

South Atlantic States

BALTIMORE, July 19.

WORK is under way on the proposed new plant of the Tannin Corporation, 109 East Forty-second Street, New York, near the marine terminal, Wilmington, Del., for the production of tanning extracts. The project will include a power plant and pumping station. Crane runways will be built for electric traveling cranes to handle logs from storage to plant for tannin extraction. The entire works will cost in excess of $500,000 and will give employment to about 250.

C. A. Deas, Rock Hill, S. C., has inquiries out for a quantity of 8-tooth sprockets, similar to those used for cotton-picking machines; also for universal joints, steel gears and affiliated equipment for like service, and for a quantity of cold rolled steel for manufacturing such machinery. It is purposed to establish a local assembling and parts plant, with estimated cost in excess of $45,000 including equipment.

The Board of Commissioners, District of Columbia, District Building, Washington, is asking bids until July 27 for one 3-wheel steam road roller and one gasoline engine-driven power loader, with caterpillar traction device; until Aug. 2 for sewage pumping equipment.

The South Carolina Gas & Electric Co., Spartanburg, S. C., is planning the early rebuilding of the portion of its steam-operated electric generating plant destroyed by fire July 9, with loss estimated at $150,000 including machinery.

The Board of Public Works, Richmond, Va., R. K. Compton, director, has plans for the construction of a one-story pumping plant to cost about $50,000, designed to prevent overflow from Shockse Creek.

The Hackley Morrison Co., 1708 Lewis Street, Richmond, Va., machinery dealer, has inquiries out for a 5-ton capacity ice-making machine, with high-speed raw water equipment.

The Georgia-Carolina Electric Co., Augusta, Ga., affiliated with the Augusta-Aiken Railway & Electric Corporation, is disposing of a note issue of $1,500,000, a portion of the proceeds to be used for the acquisition of additional properties, and for extensions and improvements. Joseph K. Choate is president.

The Columbus Casket Co., Columbus, Ga., Thomas Cooper, head, has leased a local building for the establishment of a new plant. A list of equipment has been arranged. Willard Benson will be superintendent.

Bids will be received by the general purchasing officer, Panama Canal, Washington, until Aug. 6 for one 50-ton electrically-operated stiff leg derrick, Panama circular 1746.

The City Council, Winston-Salem, N. C., is considering the installation of pumping equipment in connection with proposed extensions in the municipal waterworks and sewage system. A bond issue of $400,000 is being arranged.

The Consolidation Coal Co., Continental Building, Baltimore, has tentative plans for extensions and improvements at its Pinnickinnick mine, Clarksburg district, including the construction of a modern tipple, installation of additional mining machinery, mine cars, etc. The expansion is estimated to cost $225,000.

The Baltimore Oil Co., 310 High Street, Baltimore, has plans for a two-story storage and distributing plant, 50 x 100 ft., at 108 York Street, to cost $37,000 with equipment. P. T. Bond, 214 North Linwood Avenue, is architect.

The City Council, Rome, Ga., is considering the installation of pumping machinery in connection with proposed extensions and improvements in the municipal waterworks to cost $70,000. A bond issue will be arranged at once.

The Georgia Southern Power Co., Dublin, Ga., has acquired the municipal electric light and power plant at Lyons, Ga., and will consolidate with its properties. Plans are under way for extensions and improvements in this district, including transmission line construction.

The Hanks Stove & Range Co., Rome, Ga., has preliminary plans for extensions in its plant to cost about $22,000. A new warehouse and distributing works will be arranged.

The North Carolina Public Service Co., Greensboro, N. C., is arranging for the early sale of a new bond issue, the fund to be used for extensions and improvements in plants and system. The company is operated by the General Gas & Electric Co., 50 Pine Street, New York.

Fire, July 10, damaged a portion of the four and one-story building at 831-35 Greenmount Avenue, Baltimore, occupied jointly by the American Street Lighting Co., American Mantel Co. and the Automatic Lighting Co. An official estimate of loss has not been announced. It is planned to rebuild.

The Automatic Syphon Corporation, 501 MacBain Building, Roanoke, Va., has been incorporated with $50,000 capital stock to manufacture automatic syphons. For the present the company will have its product manufactured on contract and is interested in getting in touch with companies which manufacture metal stampings on contract.

The Climax Engineering Co., Clinton, Iowa, has appointed H. J. McClenhan & Co., 615 Water Street, Baltimore, agents in that district for replacement parts and service for its line of engines.

Detroit

DETROIT, July 19.

CONTRACT has been let by the Globe Pattern Works, 315 East Kalamazoo Avenue, Kalamazoo, Mich., manufacturer of metal and wood patterns, for a new two-story shop, 40 x 66 ft., to A. D. Loughead, 714 Eleanor Street, to cost $25,000. D. W. Valentine is one of the heads of the company.

The Citizens' Gas & Fuel Co., Adrian, Mich., has entered into agreement with the city for extensions and improvements in its local plant to cost close to $100,000, including the installation of additional equipment, following the signing of a new rate contract with the municipality.

The Board of School Trustees, Fordson, Mich., plans the installation of manual training equipment in a proposed three-story high school to cost close to $1,000,000. H. J. Keough, Detroit, is architect.

The Packard Motor Car Co., 1580 East Grand Boulevard, Detroit, has asked bids on a general contract for the erection of a new one-story unit to cost in excess of $100,000, to be used for aircraft engineering service. Albert Kahn, Inc., Marquette Building, is architect.

Fire, July 9, destroyed a portion of the plant of the Hanna Asphalt Co., East Six-Mile Road and the line of the Detroit Terminal Railway, with loss reported at close to $150,000 including equipment. Plans for rebuilding are under consideration.

The Grand Rapids Body Co., Grand Rapids, Mich., has acquired the plant and property of the Field Body Co., Owosso, Mich., at a public sale for $121,000. The new owner will make improvements in the Field plant, including equipment betterments, and will continue operations as a branch works. P. B. Schravesande is president of the purchasing company.

The General Power & Light Co., Traverse City, Mich., is disposing of a note issue of $1,500,000, a portion of the fund to be used for the acquisition of additional properties, including extensions and improvements. E. J. Condon is president.

Carey & Esselstyn, Hoffman Building, Detroit, architects, will soon take bids on a general contract for a two-story service, repair and garage building, 125 x 190 ft., for the Detroit Cab Co., 835 East Larned Street, estimated to cost $160,000.

The Double Drive Truck Co., Benton Harbor, Mich., has reopened its local plant for the manufacture of truck wheels

and equipment, and plans to develop a capacity schedule at an early date. Robert Keck is president.

The Duluth, South Shore & Atlantic Railroad Co., Marquette, Mich., is said to be planning the construction of a new engine house with repair facilities at Nestoria, Mich., selected as the terminal for the Western division of the lines. It is also purposed to construct coal docks at this location, with handling, conveying and other mechanical equipment, as well as a large water tank and other terminal structures.

The Norton Co., Worcester, Mass., manufacturer of refractory products, etc., will soon ask bids for the erection of a two-story factory branch and distributing plant at Detroit, comprising about 30,000 sq. ft. of floor space, estimated to cost $55,000. Frost, Chamberlain & Edwards, 390 Main Street, Worcester, are architects.

The Saginaw Furniture Shops, Saginaw, Mich., have acquired the local plant of the Brooks Boat Co., and will improve for a new branch works.

The Leonard Refrigerator Co., Detroit, a unit of the Electric Refrigeration Corporation, plans expansion of plant to cost about $1,500,000.

George E. Gustafson, sales engineer for the Kearney & Trecker Corporation, Milwaukee, manufacturer of milling machines, who has been looking after the interests of his company in Boston and Philadelphia, will move to Detroit early in September where he will make his headquarters with the Charles A. Strelinger Co.

The Continental Tool Co., McGraw Street, Detroit, has placed contract with the Austin Co., General Motors Building, for a new plant to cost about $250,000 with equipment. It will be one story, containing approximately 30,000 sq. ft. of floor space. The company manufactures special tools for the automotive industry.

The Manufacturers' Exhibit and Sales Bureau, 4611 Woodward Avenue, Detroit, has been organized by R. M. Grindley, who owns the Convention Hall Building at that address, said to be one of the largest exposition halls in the country. A part of the space in the Convention Hall will be utilized for permanent exhibits. A department will be devoted to the display of special machinery used in various manufacturing industries of Detroit.

The Imperial Radio Corporation, Grand Rapids, Mich., has been incorporated with capital stock of $50,000 and has acquired the business, plant, tools, machinery, etc., of the former Klitzen Radio Mfg. Co., and the Michigan Radio Corporation. It will manufacture radio receivers.

Indiana

INDIANAPOLIS, July 19.

WORK will soon begin on the new unit at the plant of the Remy Electric Co., Anderson, Ind., manufacturer of electric lighting and starting systems, to be one story, 300 x 600 ft., to cost in excess of $350,000 with equipment.

John D. Miller, Colfax, Ind., has acquired the local drain tile manufacturing plant of the Colfax Tile Co., inactive for about two years. The new owner will make extensions and improvements, including necessary equipment replacements, and plans to begin production in August.

The Indiana Tire & Battery Shop, 626 North Meridian Street, Indianapolis, will install a battery service and repair works in its proposed new one-story plant at 710-14 North Meridian Street, to be U-shaped, 20 x 128 ft. and 20 x 124 ft., to cost $55,000 with equipment. Samuel A. Craig, 31 West Ohio Street, is architect.

The National Cab & Truck Co., Indianapolis, is expanding production facilities for the rebuilding of used taxicabs, occupying more than one-third of the former plant of the Premier Motor Co., and plans further increase with proposed placing of different branches of the work in outside shops. The rebuilding consists of complete dismantling, parts replacement, refinishing, etc. The company was organized last April to manufacture taxicabs and motor trucks, and also purposes to develop large capacity in these lines. Charles O. Warfel is secretary and treasurer, and Frederick I. Barrows, general manager.

Vonnegut, Bohn & Mueller, Indiana Trust Building, Indianapolis, architects, have plans for a two-story and basement automobile service, repair and garage building, 95 x 300 ft., to cost $65,000 with equipment.

The Tell City Furniture Co., Tell City, Ind., is having plans drawn for a one-story addition to cost about $25,000. Fowler & Karges, Furniture Building, Evansville, Ind., are architects.

The Murray Body Corporation, Detroit, plans the installation of additional equipment in the portion of the plant of Marmon Motor Car Co., Indianapolis, which it will occupy for the exclusive production of bodies for Marmon cars. The floor space totals 400,000 sq. ft. It is purposed to develop an output of about 75 complete bodies per day, giving employment to upward of 1800 men.

Vocational shops will be installed in the two-story and basement high school to be erected by the Board of School Trustees, Bloomington, Ind., estimated to cost $110,000. Alfred Grindle, Western Union Building, is architect.

The Indianapolis Light & Heat Co., Monument Circle, Indianapolis, has plans in progress for a new creosoting plant on Morris Street, installation to include creosote cylinders, boilers, pumps, tanks and complete yard equipment. The company will also construct a one-story service, repair and garage building at this location for motor trucks and cars. The entire project will cost approximately $400,000 with machinery.

The Citizens Gas Co., Majestic Building, Indianapolis, has awarded a contract to the Heyl-Patterson Co., Water Street, Pittsburgh, for a coal-handling plant at its Prospect Street station to cost $375,000. F. G. Rastenberg is secretary.

The Motor Sales Co., Bloomington, Ind., will soon begin the construction of a three-story service, repair and garage building, 70 x 140 ft., estimated to cost $60,000 with equipment. Allen Buskirk is president.

The Clark Metal Lath Co., Mishawaka, Ind., has plans under way for a one-story addition to cost close to $20,000. W. W. Schneider, 120 Main Street, South Bend, Ind., is architect.

Gulf States

BIRMINGHAM, July 19.

PRELIMINARY plans are being considered by the Dallas Power & Light Co., Dallas, Tex., for an addition to its equipment storage, distributing and repair building to cost $90,000.

The Brown Paper Mill Co., Inc., Munroe, La., is disposing of a bond issue of $2,500,000, a considerable portion of the fund to be used for expansion in the production of kraft papers. The work will include the erection of new buildings and the installation of a new paper-making machine and accessories, thickening and screening equipment, continuous pulp-washing apparatus, revolving digesters, vacuum evaporators, mud filter equipment, as well as electric generating equipment and other power apparatus. George F. Hardy, 305 Broadway, New York, is consulting engineer, in charge. George S. Holmes is vice-president and general manager.

The Standard Power Equipment Co., Birmingham, has inquiries out for a revolving combination shovel and dragline mounted on crawlers, about ½ to ¾-yd. capacity, any type of power operation, gasoline engine preferred.

E. W. Parker, 305 Cass Street, Tampa, Fla., is at the head of a project to organize the Pyrite Brick Co., capitalized at $150,000, to establish a plant in this vicinity for the production of brick from waste material secured from phosphate rock. The initial factory will be equipped for an output of 40,000 brick per day, and is reported to cost close to $60,000 with machinery.

The White Co., Avenue C, Birmingham, manufacturer of motor trucks, with headquarters at Cleveland, will begin the erection of a one-story and basement service, repair and garage building, 140 x 150 ft., to cost about $85,000 with equipment. C. H. McCauley, Jackson Building, is architect.

The Board of City Commissioners, Jacksonville, Fla., is considering plans for extensions and improvements in the municipal electric light and power plant to double approximately the present capacity and to cost $2,000,000 including additions to underground conduit system and transmission lines. Frank H. Owen is commissioner of public utilities.

The Gas Chemicals Corporation, Colorado Springs, Colo., has plans under way for the construction of a new gasoline refinery in the Panhandle field, near Amarillo, Tex., to cost in excess of $750,000 with equipment. F. M. Taylor, Colorado Springs, is president. The Coyle & McClure Engineering Co., Amarillo, is understood to be interested in the project.

The Ana-Cris Novelty Works, Thirty-ninth Street and Opelache Avenue, Hialeah, Fla., has begun the erection of a one-story addition to its wood-working plant and will install considerable additional machinery. C. M. Williams is manager.

The Presidio Mining Co., Shafter, Tex., has plans for a new cyanide mill for the treatment of silver and other ores, with equipment to handle about 250,000 tons of material per day. It will cost close to $200,000 with machinery.

The Common Council, Vernon, Tex., plans the installation of pumping equipment in connection with extensions in the municipal waterworks. A bond issue of $40,000 is being arranged.

The E. A. Carlston Home Builders Co., 303 Donaldson Avenue, San Antonio, Tex., is considering the installation of a local plant for the manufacture of cement roofing tile. Inquiries are being made regarding necessary machinery.

The Creole Refining Co., New Orleans, has preliminary plans for the erection of a new works for the manufacture of lubricating oils, to cost about $160,000 with machinery.

The Yazoo & Mississippi Valley Railroad Co., New Orleans, has acquired 35 acres in the vicinity of Vicksburg, Miss., and is reported to be planning the construction of new locomotive and car repair shops.

The Magnolia Petroleum Co., Dallas, Tex., has plans under way for extensions in its refinery at Fort Worth, Tex., to include the installation of new high pressure stills and other equipment. The entire expansion is reported to cost close to $500,000. The present capacity of 15,000 bbl. per day will be considerably increased. B. H. Stephenson is vice-president and general manager.

The Common Council, Athens, Ala., is considering tentative plans for a municipal electric light and power plant to cost approximately $25,000.

F. K. Webb, commissioner of public works, Palmetto, Fla., is asking bids until July 26 for purchasing or leasing a Diesel engine electric generating unit for street-lighting and other municipal service.

The Board of Education, McAllen, Tex., is considering the installation of manual training equipment in a proposed new high school to cost about $200,000, for which bids will soon be asked on a general contract. R. H. Cameron, City National Bank Building, San Antonio, Tex., is architect.

The Marine Ways Machine Co., Seventh Avenue South and Third Street, St. Petersburg, Fla., E. M. Crawford, head, has inquiries out for renickeling and coppering equipment, including complete outfits for this purpose.

The Southern States Iron Roofing Co., Savannah, Ga., Jesse and Hal Fulenwider, executives, will equip a plant in Birmingham to begin operations early in the fall. Roofing and reinforced concrete material will be manufactured from sheet steel purchased from the Tennessee Coal, Iron & Railroad Co., Fairfield.

Southern headquarters of the St. Louis Federated Metals Corporation will be located in Birmingham with office and warehouse.

The G. L. Anderson Brass Works, Inc., 831 North Thirty-ninth Street, Birmingham, has doubled its capital stock and is erecting a new plant for the manufacture of non-ferrous castings. It will cost with equipment about $15,000. Beginning Aug. 1, Lloyd Johnson, formerly superintendent Joubert & Joslin Machine & Foundry Co., Birmingham, will become vice-president and have charge of plant operations of the Anderson Brass Works.

Milwaukee

MILWAUKEE, July 20.

ANOTHER week of moderately active business is reported by machine tool builders. Dealers as well regard July trade up to this time as being considerably better than a year ago, with prospects fully as favorable for the coming months. Sales represent a wide range of industries, with automotive lines offering the most promising opportunities for new business. Employment in Milwaukee generally has shown little variation the past month and is measurably ahead of a year ago, with skilled labor for the foundry and machine shop trade scarce and wanted.

The Berg Supply Co., Marshfield, Wis., manufacturer of steel dairy barn equipment, has acquired the business and property of the Abbotsford, Wis., Mfg. Co., engaged in similar lines, and is consolidating the operation with its Marshfield works. An addition will be erected at once to accommodate the increased production. The Berg company some time ago purchased the Mullins Mfg. Co., Brillion, Wis., and is now one of the largest Northwestern makers of steel cow stanchions, litter and feed carriers, steel pens and other stock and dairy barn equipment.

The Wisconsin Public Service Co., 555 Marshall Street, Milwaukee, has awarded the general contract to the Western Gas Construction Co., Fort Wayne, Ind., for the construction and equipment of a new gas producer and storage plant costing about $300,000 at Two Rivers, Wis. H. C. Pepper is engineer in charge.

The American Carbonic Machinery Co., Wisconsin Rapids, Wis., builder of artificial ice and refrigerating machinery, has increased its capital stock from $450,000 to $650,000 and contemplates enlargement of its works. Details have not yet been made public.

Edwin C. Hall, 210 Sycamore Street, Milwaukee, structural engineer, has incorporated the Hall Steel Joist Co. of Milwaukee, capital stock $50,000 to manufacture steel joists and building materials. The charter also provides for erecting and removing steel structures. For the present the materials will be manufactured under contract.

The Tayco Register Shield Co., Menasha, Wis., has been incorporated with $20,000 capital stock to succeed a partnership of the same name which for some time has been engaged in manufacturing metal shields for heating radiators and registers and humidifying devices for domestic, industrial and commercial heating plants. Additional space has been taken and some new equipment is being purchased. The principals are C. M. Crawford, J. W. Hewitt, George D. Barnes and H. A. Briggs, all of Menasha.

Bids close July 22 in the office of Albert Kahn, architect, Marquette Building, Detroit, for the construction of a one-story brick and steel addition, 150 x 645 ft., to the Janesville, Wis., plant of the Fisher Body Corporation, operated in conjunction with the Janesville branch factory of the Chevrolet Motor Co. The motor plant also will be enlarged, but details have not been completed. Elliott Wright is manager of the Janesville division.

The property of the Richards Iron Works Co., Ninth and Commercial Streets, Manitowoc, Wis., has been purchased from the receiver by the Clark Oil Co. for $23,100. The new owner has not indicated what disposition it will make. The machine shop has been operated without interruption, being devoted largely to ship machinery construction and marine repairs.

The new group of three buildings to be erected by the Pittsburgh Plate Glass Co. as an addition to its Patton-Pitcairn Division at 205 Lake Street, Milwaukee, will consist of a complete plant for producing automobile finish. The main factory will be 60 x 130 ft., three stories, with a two-story warehouse, 50 x 75 ft., and a tankhouse, 40 x 50 ft. Kirchhoff & Rose, architects, 210 Sycamore Street, are now taking construction bids. Ludington Patton is general manager.

The Russell Machinery Co., Platteville, Wis., has completed a new machine shop at North Water and East Mineral Streets at a cost of about $30,000 and is transferring the operation. It specializes in heavy repair work on mining machinery, threshers, trucks, tractors, etc.

Cincinnati

CINCINNATI, July 19.

LITTLE change was noted in the local machine tool market the past week. Inquiries were few, the most important being that of the Nordyke & Marmon Co., copies of which have not yet been received by the trade. Railroads and automobile manufacturers have been doing some buying and several sizable sales were made. The largest single sale reported was for six machines to the Lima Locomotive Works.

Among sales reported the past week by the Niles Tool Works, Hamilton, Ohio, are the following: Atlantic Coast Line, for shops at Wilmington, N. C., one 48-in. x 14-ft. slab milling machine and two 100-in. boring mills; Lima Locomotive works, six center boiler plate drills; Bethlehem Steel Co., two No. 3 axle lathes; Boston & Albany Railroad, one 30-in. x 10-ft. slab miller; Chicago & North Western, one 53-in. boring mill and one 42-in. carwheel borer, Wabash Railroad, one 90-in quartering machine and one 6000 lb. steam hammer.

Contract has been let by the William Powell Co., 2521 Spring Grove Avenue, Cincinnati, manufacturer of valves, steam specialties, etc., to the J. F. Harig Co., 1240 Queen City Avenue, for a two-story addition, 122 x 145 ft., to be equipped as a foundry and machine shop, estimated to cost $200,000 with machinery. Tietig & Lee, Merchants' Building, are architects; Fosdick & Hilmer, Union Trust Building, are mechanical engineers. H. H. Coombe is president.

The Randle Machinery Co., 1723 Power Street, Cumminsville, Cincinnati, machinery dealer, has inquiries out for a 300-kw. generator, direct-connected to engine unit, Corliss type preferred, generator to be 3-phase, 60-cycle, 220 or 440 volts a.c.

The Board of Education, Columbus, Ohio, has filed plans for the erection of a one-story manual training shop at the Central high school, West Broad Street, to be 65 x 150 ft., to cost $80,000 with equipment.

The Crane Enamelware Co., Chattanooga, Tenn., is said to have preliminary plans under advisement for extensions

in its plant in the Alton Park section, estimated to cost $400,000 with equipment. The company is affiliated with the Crane Co., 836 South Michigan Avenue, Chicago.

The Kentucky-Tennessee Light & Power, Guthrie, Ky., has acquired the municipal electric light and power plants and systems at McKenzie, Tenn., and Murray, Ky., and will consolidate with its properties. Plans are under way for extensions and improvements in these districts, including transmission line construction.

The Board of Education, Ripley, Tenn., contemplates the installation of manual training equipment in its proposed one and two-story high school to cost $100,000, for which superstructure will soon be placed under way. R. A. Heavener and J. F. Parrish, Knights of Columbus Building, Jackson, Tenn., are architects.

Alexander M. Robinson, Georgetown, Ky., machinery dealer, has inquiries out for a number of rotary steam heat dryers, Louisville type preferred.

The Athens Chemical Co., 48 Miami Street, Columbus, Ohio, C. R. Monsurat, president, has plans for a new salt mining and refining works at Athens, Ohio, to cost $160,000 with machinery.

The Ohio Malleable Iron Works, 1325 Fields Avenue, Columbus, Ohio, has filed plans for a one-story addition to be equipped primarily for fuel storage and handling service, to cost $90,000 with machinery.

The Atlas Paper Box Co., 1303 Cemetery Avenue, Chattanooga, Tenn., is considering the erection of a one-story addition to cost $20,000.

Ovens, power equipment, conveying and other machinery will be installed in the new plant to be constructed by the American Bread Co., Nashville, Tenn., to cost $130,000. C. K. Evers is president.

The Beare Ice & Coal Co., Jackson, Tenn., is reported to be planning the construction of a new ice-manufacturing plant to cost $90,000 with machinery.

The Kant-Skore Piston Co., Spring Grove and Hopple Streets, Cincinnati, has awarded a general contract to H. C. Hazen, 2070 Reading Road, for a one-story addition to its plant on Beekman Street to cost about $18,000.

The Jellico Brick Corporation, Jellico, Tenn., recently reorganized with a capital of $250,000, is planning the installation of additional equipment for increased output. Inquiries are being made for a steam shovel for clay-mining.

The Seifreat-Elstad Machinery Co., Dayton, Ohio, is representing the Cleveland Planer Co., Cleveland, exclusively in the sale of Cleveland open-side planers in southern Ohio, eastern Indiana and Kentucky east of the Tennessee River.

The Triumph Electric Co., Cincinnati, manufacturer of motors, has been succeeded by the Triumph Electric Corporation. The new company will specialize on its self-starting, automatic heavy-duty motor and will also continue to supply the trade with other lines of electrical and refrigerating products. J. C. Hobart is manager.

Pacific Coast

SAN FRANCISCO, July 14.

REVISED plans are being prepared by the Los Angeles Railway Co., Pacific Electric Building, Los Angeles, for its proposed one and two-story motor bus repair and reconditioning shop at 792 East Fifteenth Street, to cost $80,000 with equipment.

Officials of the Schumacher Wall Board Co., 5802 San Pedro Street, Los Angeles, have organized the Schumacher Wall Board Corporation, capitalized at $9,000,000, under Delaware laws, to take over and expand the present organization.

Paul Lavergne, 3119 San Pablo Avenue, Oakland, Cal., architect, has plans for a one-story automobile service, repair and garage building, 180 x 200 ft., at Twenty-sixth and Peralta Streets, to cost $70,000 with equipment.

The Kay Steel Wheel Co., Los Angeles, has awarded a general contract to the Austin Co. for the first unit of its proposed new plant on Meridian Street, Alhambra, Cal. It will be one-story, 40 x 85 ft. Other units will be built later.

The Pacific Power & Light Co., Portland, Ore., is considering the early rebuilding of the portion of its equipment storage and distributing plant at Kennewick, Wash., destroyed by fire July 6, with loss reported at $115,000 including equipment.

The Board of City Trustees, Milton, Ore., is arranging a fund of $30,000, the proceeds to be used for extensions and improvements in the municipal electric light and power plant, including the installation of additional equipment.

The United States Bureau of Reclamation, Denver, Colo., has completed plans for a proposed hydroelectric power project at Minidoka, Idaho. It is expected to ask bids soon. R. S. Walter is chief engineer.

The Board of Education, Los Angeles, will soon begin the erection of a one-story manual training shop at the Warren G. Harding high school, Sawtelle. A list of equipment will soon be arranged. Norman W. Alpaugh, 2404 West Seventh Street, is architect.

The Menefee Lumber Co., Rainier, Ore., is considering plans for rebuilding the portion of its mill recently destroyed by fire, with loss reported at $250,000 including machinery. A. E. Allen is general manager.

The Board of Education, Ogden, Utah, will proceed with the construction of manual training shops at the local high school, to cost close to $30,000. M. Charles Woods, Eccles Building, is architect.

The Lake Chelan Reclamation District, Manson, Wash., contemplates the installation of a pumping plant in connection with proposed extensions in its system, taking a supply from Alkali Lake.

The municipal power and light bureau, 207 South Broadway, Los Angeles, E. F. Scattergood, chief electrical engineer, is arranging an expansion and improvement program to cost approximately $14,000,000, including the construction of a hydroelectric power plant with capacity of 47,000 hp., auxiliary steam-operated electric generating plant in the San Pedro Harbor district, extension in transmission lines, etc.

The Janson Iron Works, formerly at 6408 San Pablo Avenue, Oakland, Cal., recently moved to new and larger quarters at 1265 Sixty-fifth Street, Emeryville, Cal., where it occupies about 36,000 sq. ft. of floor space. The Janson Iron Works was established in 1906 and specializes in light steel fabricating and ornamental iron work.

Canada

TORONTO, July 19.

WHILE much of the current demand is for single tools on replacement account, more extensive buying is now being done in connection with new works and several large orders are in prospect for plants under construction. Orders are of a diversified nature and are coming from all parts of the Dominion. The automotive industry is again a strong factor in the market and while some good orders have recently appeared from this source, Canadian builders are looking for good sized lists from the General Motors Corporation for its $500,000 addition at Oshawa, Ont. The Aluminum Corporation of Canada, Ltd., has been buying considerable equipment for its works at Arvida, Que., and expects to have the first unit of the plant in operation by September.

The James Shearer Co., Montreal, has been awarded the building contract for the construction of shops at Limoilou, Que., for the Quebec Power Co., at a cost of $216,000. Other contracts, including general equipment, will bring the expenditure to about $500,000. Work on the plant will start immediately, the main building to be about 200 x 387 ft.

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A. B. Greer & Son, 99 York Street, London, Ont., have started work on an addition to their carriage factory to cost $15,000. Work is under the supervision of W. Hawkins, architect, 341 Emery Street.

W. J. Tremble, has been awarded general contract for an addition to the mills of the Provincial Paper Mills, Ltd., Port Arthur, Ont., to cost $50,000.

J. A. Tremblay, engineer of waterworks, Municipal Council, Quebec, is receiving bids for furnishing and installing gasoline or electric pumps for the waterworks plant.

Dexter P. Cooper, Inc., is preparing plans for a hydropower development on the Passamaquoddy River in Charlottetown County, New Brunswick, from Deer Island to the mainland to cost between $75,000,000 and $100,000,000. Dexter P. Cooper, Cambobelo, N. B., is engineer in charge.

The British Empire Steel Corporation, with main office at Montreal, will build a new power plant at Harrison's Lake near Maccan, N. S., to supply power for the company's plant at Springhill.

Construction on the plant at Beaupre, Que., for the Ste. Anne Paper & Power Co., is well under way and it is expected to have the buildings ready and equipment installed by the end of the year.

Western Canada

The plant of the Alberta Cotton Shingle Mill at South Vancouver, B. C., was destroyed by fire with a loss of $55,000. It is proposed to rebuild and considerable woodworking and other equipment will be required.

The ratepayers of Kamloops, B. C., have authorized the expenditure of $60,000 on additions and improvements to the Barriere hydroelectric power plant. A. W. Jackson is city clerk.

G. C. Dews and J. F. Barnes, formerly with the Columbia Steel Corporation, Pittsburgh, Cal., have established a brass foundry which will operate under the name of the Pittsburgh Boiler & Machine Works.

Foreign

THE Government of India, Calcutta, is completing plans for the construction of a new hydroelectric generating plant on the Pykara River, Nilgiris, which provides a drop of 400 ft. in a series of falls. A power dam will be built to impound four billion cu. ft. of water for plant service. A weir and flume will be constructed to a forebay and a pipe line installed from this point to the power house. The station will be equipped for an initial output of 37,000 kw. A grant of $360,000 has been allowed for initial work on the project. This will be the first of three such generating plants to be built. Information at the office of the Bureau of Foreign and Domestic Commerce, Washington, under Reserved Information India, No. 212977; also at the office of the American Consulate, Calcutta, Richard D. Simonson, vice-consul.

The Public Works Supplies and Tenders Board, Wellington, New Zealand, is asking bids until Aug. 24 for a hammer spring electric power board, water wheel generator and accessories.

The Aluminum Co. of America, Oliver Building, Pittsburgh, has entered into contract with the concessions committee of the Russian Soviet Government for the exploitation of aluminum mines in the northwestern part of the country. It is purposed to install equipment and proceed with development in the near future.

The Nuske Fuel & Nitrogen Co., Ltd., Victoria, New South Wales, Australia, organized with a capital of $2,000,000, has secured property at Prospect Reservoir, vicinity of Victoria, as a site for a new plant for the extraction of nitrogen from air. Plans for the new fixation plant will be prepared at once. It is reported to cost in excess of $750,000 with machinery.

Bids are being asked by Andres Pastoriza, secretario de Estado de Formento y Comunicaciones, Santo Domingo City, Dominican Republic, West Indies, until Sept. 30 for equipment for a new city waterworks and sewage system, including pumping machinery and accessories. Plans and specifications at the office of the Dominican Consulate, Whitehall Building, New York.

The Toho Electric Power Co., Ltd., Tokyo, Japan, is disposing of a note issue of $10,000,000 in the United States (Guaranty Trust Co., New York, trustee), a considerable portion of the proceeds to be used for extensions and betterments in present properties and acquisition of additional utilities. The company has work under way on an addition to its steam-operated electric station to advance the output by 35,000 kw. Y. Matsunaga is vice-president.

THE LAST WORD

(Contributed by the Reader Service Department of the Iron Age Publishing Co.)

JUST when we were becoming reconciled to the disheartening revelation that four out of five have pyorrhea, the Metropolitan Life Insurance Co. makes an investigation and proves that the proportion is all wrong, for only one out of twenty has the widely advertised gum malady.

And after admiring for years those very business men who say annually, "I haven't had a vacation in —— years," along comes another investigator with proof that the non-vacationist is actually away from work a greater number of days during the year, through sickness, than the man who fishes, hunts, plays golf, sails, or just loafs a couple of weeks every twelfth month.

All of which goes to show that you can take nothing for granted. Better take an extra week this year.

BY special request of the Prince. *"The Crown Prince himself said, 'Be sure that article from* THE IRON AGE *is included'," we were told the other day by the gentleman commissioned to prepare a collection of press clippings regarding the American visit of Sweden's Crown Prince.*

Though we accept this with the usual g. of s., nevertheless we cannot but feel that the Prince is blessed with rare discernment.

IT is the general practice of those selling the metal trades to follow up the sales leads in THE IRON AGE's industrial news section. A hoist manufacturer has gone a step further and has had printed a four-page sales letter especially designed for making use of these industrial news items.

The first sheet of the letter has a cut-out panel. The news item itself is pasted on the third page, and as it shows through the panel, it is the first thing that strikes the reader's eye when he opens the letter. The impression it makes is decidedly favorable, for new companies (and for that matter, old companies as well) are ordinarily not averse to publicity.

IF you find a certain popular five-cent weekly in the hands of anyone who pleads guilty to ultra-refined literary tastes, the chances are he will say, "I buy it so that I may read the advertisements."

Of course, in a moment of weakness he may read the sometimes interesting and rarely elevating fiction, if no one is looking, but the ads he scans right out in public.

Things have come to a pretty pass when the advertising seriously competes with the editorial pages for attention. Something ought to be done about it. Why, just the other day a number of manufacturers won prizes at the convention of the National Industrial Advertisers' Association by exhibiting advertisements they had used in THE IRON AGE. *Many of the men who are writing advertising copy these days surely do know how to make reading painless.* A. H. D.